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COMMERCIAL FISHERIES REVIEW

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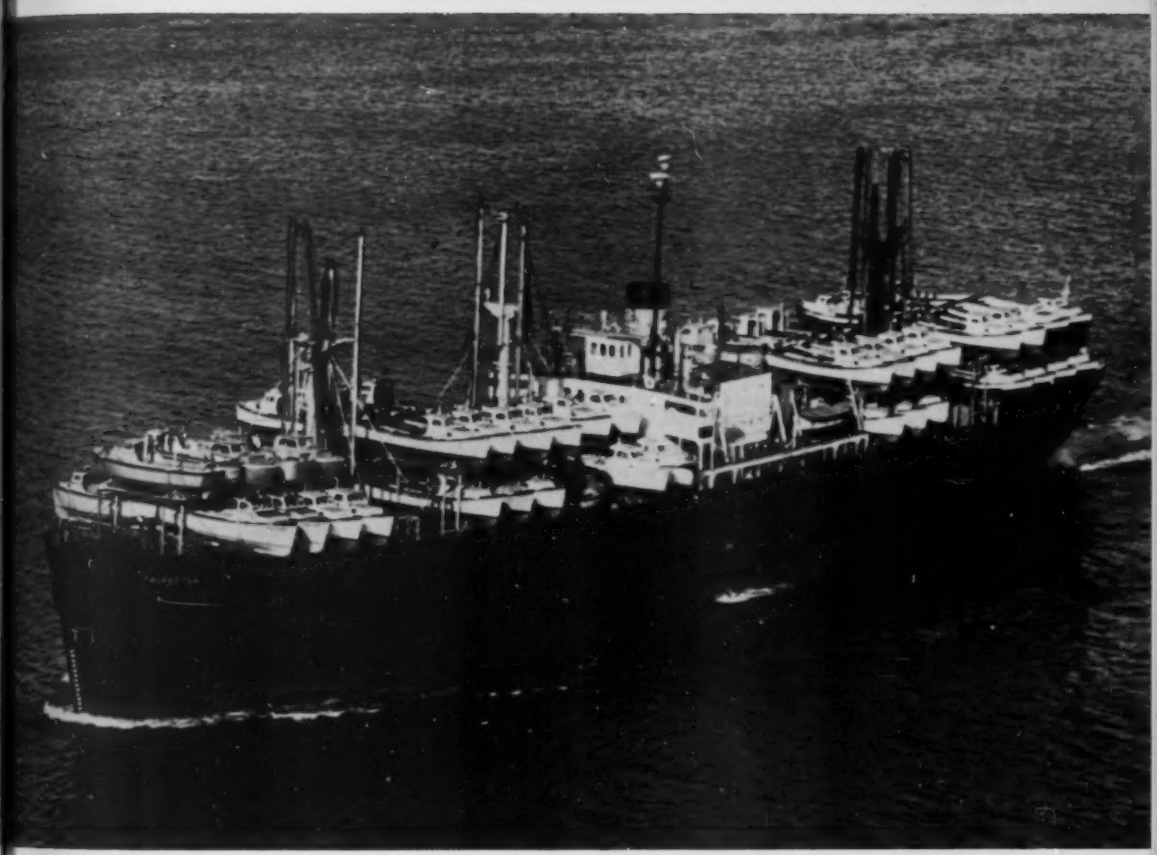

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RALPH C. BAKER, CHIEF

COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

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COVER: Gill-net boats stacked on the deck of a cargo vessel bound for Alaska. The cargo consists of 99 vessels. About 210 (150 were built in the Seattle, Wash., area) of these new gill-netters were completed early this year in time principally for the salmon season in the Bristol Bay area of Alaska. The run of sockeye or red salmon in that area this season is expected to be as good if not better than in 1960. The new gill-net vessels are built to carry 6,000 red salmon (about 30,000 pounds). Powered by a 94 hp. turbo-charged Diesel engine, the vessels have a speed of 13.2 knots.

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A STUDY OF VESSEL AND GEAR USAGE IN THE SHRIMP FISHERY OF THE SOUTHEASTERN UNITED STATES

By Rolf Juhl*

SUMMARY

As a portion of a program designed to study means of improving the efficiency of fishing gear and fishing practice in the shrimp fishery of the Southeastern States, operators of 58 highline shrimp vessels were interviewed concerning vessels, gear, and practices employed. Results were analyzed in an attempt to determine the extent of uniformity of gear design and usage, the existence of general trends within the fishery, and points of confused or questionable practice.

A diversity of types of gear, vessel-gear combinations, and fishing practices was uncovered. This diversity points to the pressing need for study leading to the development of standards by which the efficiency of fishing gear and methods can be evaluated. Such study has been started by the U. S. Bureau of Commercial Fisheries Gear Research Unit at Pascagoula, Miss.

INTRODUCTION

The U. S. Bureau of Commercial Fisheries has been engaged in a formalized program of exploratory fishing and gear research since 1948. One current phase of the gear-research work is the study and improvement of the methods and gear used in the shrimp fishery of the Southeastern States.

This report provides a general evaluation of the present status of some of the fishing practices used by the industry. Primary objectives are to determine: (1) What uniformity of gear and methods is present; (2) what regional trends, if any, exist; and (3) what aspects of gear design and usage show the greatest need of improvement. Determination of these objectives is a necessary step in initiating the development of recommendations for standards for vessel equipment, fishing gear, and fishing practice; and is a means of uncovering areas of questionable or confused practice that can be analyzed in the underwater photographic studies of shrimp trawls currently being carried out by the Bureau.

Fig. 1 - A typical double-rigged "Florida-type" shrimp trawler. At sea, the "outriggers" or port and starboard booms are lowered and one trawl is dragged from each.

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The basic data for the study were obtained through the Bureau's statistics personnel at ports, from North Carolina to the Texas-Mexico border, where the operators of 58 selected highline shrimp vessels were located. Information compiled therefrom is divided into the following main topics: (1) Type, size, and power of the vessels used; (2) size, design, and construction material of gear used; and (3) correlations existing between vessels and gear and among gear components. In addition, a discussion is included of the angle of trawl-door set and its influence.

THE VESSELS

Fig. 2 - A typical single-rigged "Florida-type" shrimp trawler. The single net is dragged from the starboard boom. The smaller port boom or "outrigger" is used to drag a small trynet.

The vessels used in the shrimp fishery of the Gulf of Mexico and southeastern coast of the United States have been described previously (Knake, Murdock, and Cating, 1958; Sundstrom 1958; and USF&WS, 1959). Of the 58 highline vessels included in this study, 43 are double-rigged "Florida-type" trawlers (fig. 1), 12 are single-rigged "Florida-type" trawlers (fig. 2), and 3 are "Biloxi-type" trawlers (fig. 3). This numerical relationship is not intended to approximate the distribution of these types within the total fleet. The vessels were chosen, rather, on the basis of their records as highline units. Table 1 summarizes some of the more important attributes of the vessels studied.

Analysis of figures for individual vessels shows that the gross and net tonnages are related fairly closely to the lengths of the vessels. This relationship may be attributed to the uniform hull design of the "Florida-type" vessels. Horsepower, however, shows no such close relationship with length (fig. 4). The variation between horsepower and length is evident in all three vessel types and in vessels of all sizes, but is most pronounced in the 50- to 70-foot, 100- to 200-hp. class.

Seven different makes of engines are represented in the vessels, but over 82 percent were supplied by two major manufacturers. Diesel power is used in 57 of the boats; gasoline power is used in only 1.

Table 1 - Summary of the Characteristics of the Vessels and Gear Used by 58 Highline Shrimp Fishermen

Characteristic and Unit	Range	Mode	Mean 1/
VESSELS:			
Length over-all, feet	38 - 82	54 - 67	60.0
Beam, feet	12 - 24	18	17.5
Gross tonnage, tons	9 - 103	38 - 48	50.5
Net tonnage, tons	5 - 62	27 - 30	30.0
Effective horsepower	80 - 585	165 - 170	184.0
NETS:			
Used by Double-Rigged Vessels:			
Corkline length, feet	30 - 62	40 - 50	46.5
Leadline length, feet	39 - 79	48 - 60	55.0
Leadline weight, pounds	0 - 70	10 - 25	22.0
Mesh size, cotton, inches	2 - 2 1/4	2 - 2 1/4	-
Mesh size, synthetic, inches	1 3/4 - 2 1/4	2	-
Used by Single-Rigged Vessels:			
Corkline, length, feet	40 - 99	40-60 & 83-99	71.0
Leadline, length, feet	50 - 110	70 - 93	79.0
Leadline, weight, pounds	10 - 100	30 - 50	46.0
Mesh size, cotton, inches	2 - 2 1/4	2 - 2 1/4	-
Mesh size, synthetic, inches	1 3/4 - 2 1/4	2	-
DOORS:			
Used by Double-Rigged Vessels:			
Height, feet	2.75 - 3.33	2.66 - 3.0	2.87
Length, feet	6 - 9	7	7.12
Area, feet square	17 - 30	18 - 21	20.60
Feet of net (corkline length squared) per sq. ft. of door	1.55 - 3.05	2.21 - 2.58	2.27
Used by Single-Rigged Vessels:			
Height, feet	2.16 - 3.66	3.33	2.97
Length, feet	5.5 - 11.0	8.0	7.82
Area, feet square	15 - 40	20 - 30	23.50
Feet of net (corkline length squared) per sq. ft. of door	1.77 - 4.75	2.36 - 3.54	3.02
FLOATS, number used	0 - 11	3	3.6

1/Figures in this column cannot be used to illustrate "typical examples owing to the small percentage of the sample lying within the mean.

Fig. 3 - "Biloxi-type" shrimp trawlers. The single net is dragged astern from warps leading over blocks at the after corners of the house.

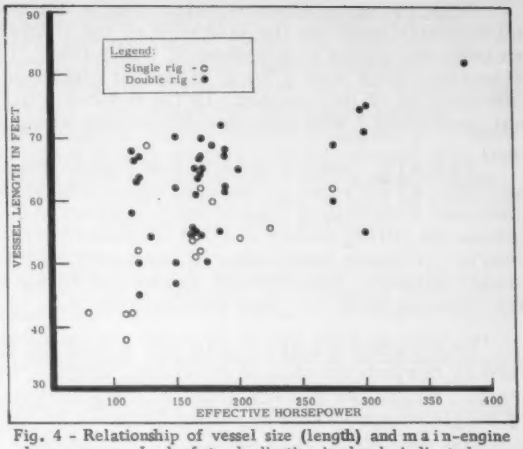

Fig. 4 - Relationship of vessel size (length) and main-engine horse-power. Lack of standardization is clearly indicated.

THE GEAR

Table 1 also summarizes the principal characteristics of the gear used by the vessel operators interviewed. This gear has been described by Bullis (1951) and, more briefly, by Knake, Murdock, and Cating (1958).

NET DIMENSIONS, DESIGNS, AND CONSTRUCTION MATERIALS: Results of the survey demonstrate that, whereas the nets used with single-rigged vessels fall into two distinct size groups, those used with double-rigged vessels are more evenly distributed about a single mode (table 1).

Nets of three designs--flat, balloon, and semiballoon--are used by the highliners. No distinct preference is found among the operators of single-rigged vessels as a group, but a definite preference for flat trawls is found among operators of double-rigged vessels (57 percent use flat trawls, 36 percent use balloon trawls, and 7 percent use semiballoon).

When the nets reported are divided into two groups, cotton and synthetic without regard to size or type, no distinct preference is discernible (table 2). Synthetic webbing, however, is used in the construction of all nets reported with a corkline length of 60 feet or over, with one exception, and randomly in nets of smaller size. The synthetic category includes four synthetic blends: nylon, nycot, marlon, and nylon-rayon combination.

Table 2 - Shrimp-Trawl Construction Materials

Trawl Type	Number of Trawls		
	Cotton	Synthetic	Total
Flat	20	16	36
Balloon	9	15	24
Semiballoon	2	6	8
Total	31	37	68

LEADLINES AND TICKLER CHAINS: The leadlines or footropes used differ from one another principally in the amount of weight attached to them (table 1). In all cases, chain of varying length and generally of $\frac{1}{4}$-inch diameter, is used to hold the leadline near the bottom. The distance between the leadline and the bottom is adjusted further by the use of rollers 1/, by lengthening or shortening the chain loops on the leadline, or by a combination of the two. The survey average (mean, table 1) shows that approximately one-third more weight is used on the leadlines of nets dragged by single-rigged vessels. Individual variation, however, is extreme, and chain weight can vary considerably depending on bottom conditions and the choice of the individual captain.

1/Rollers used by shrimp fishermen are made in two ways: By drilling holes in hollow-plastic floats and attaching these to the footrope; or by constructing spindle-shaped rollers from thin wooden slats.

With two exceptions, tickler chains are used on all nets reported. The average horizontal distance between the midpoint of the tickler chain and the leadline is 2 feet 8 inches with an over-all range of distance of 1 to 6 feet. Tickler chains are constructed from $\frac{3}{16}$- to $\frac{7}{16}$-inch-diameter chain with $\frac{1}{4}$-inch-diameter chain most often reported. Of the 49 users providing information in this regard, 19 tie the chain directly to the doors and 30 to the wings of the net, including 7 who continue the chains along the lower legs.

FLOATS: Hollow-plastic and plastic-foam floats are used most commonly; cork floats are used by only two of the operators interviewed. Since plastic foam may inadvertently be confused with hollow plastic (which would instill considerable error in calculations), calculations on lifting power are not included here. Considerable variation exists, also, in the number of floats used (table 1), and only half as many are used, generally, on sandy as on muddy bottom. The average number of floats reported for the 3 types of nets is: Flat nets, 2.1; balloon nets, 4.1; and semiballoon, 6.1.

DRAGGING WARP, BRIDLES, AND LEG CABLES: The length of the dragging warp carried by shrimp vessels is governed, largely, by the depth of water in which those vessels trawl. Within the survey sample, warp lengths vary from 75 to 750 fathoms. Warp carried by single-rigged vessels varies from 75 to 200 fathoms with a mean of 133 fathoms per drum, and that carried aboard double-rigged vessels varies from 100 to 750 fathoms with a mean of 145 fathoms per drum. The wire used varies from $\frac{1}{4}$- to $\frac{5}{8}$-inch diameter, in multiples of $\frac{1}{16}$ inch.

Bridle lengths vary from 17 to 50 fathoms, but the great majority fall within 20 to 25 fathoms. In all cases where bridles longer than 25 fathoms are reported, the net used with those bridles is over 51 feet in corkline length. Bridles are not used with single rigs.

Leg (door-to-wing connections) lengths vary with the type of trawl (table 3) and also with the type of vessel. Single-rigged vessel operators use longer legs than double-rigged vessel operators, and the longest legs are used in conjunction with semiballoon trawls.

Table 3 - Leg (Door to Wing) Lengths Used by 58 Highline Operators 1/

Vessel Rig	Mean Length of Legs (feet)		
	Flat Trawls	Balloon Trawls	Semiballoon Trawls
Double . . .	5.50	5.50	7.50
Single . . .	7.75	8.75	11.50
Combined .	5.75	6.50	10.50

1/ Rounded to nearest 3 inches.

TRAWL DOORS: In all cases, the trawl doors used were reported as flat, of wooden construction, and fitted with chain bridles shackled to rings for attachment of the bridles or dragging cables. Door dimensions are given in table 1. Although the doors used with single-rigged vessels are slightly shorter (on the average) than those used with double-rigged vessels, the average length-height ratio for all doors is 2.4:1.

CORRELATIONS BETWEEN VESSELS AND GEAR AND AMONG GEAR COMPONENTS

The foregoing discussion has served to indicate that there is a wide range of characteristics of both vessels and gear used by the operators included in the sample of 58 highliners. It can be assumed that a survey of a random sample of the whole fleet would show an even greater range. The task remains of determining whether or not patterns exist between vessel characteristics and the gear used, whether or not there are patterns existent among gear components, and whether or not differences in use exist which offset the wide range of characteristics.

HORSEPOWER AND NET SIZE: In this and the following sections, vessel horsepower, rather than vessel speed or vessel size, is used in determination of correlations, or lack of correlations, between vessels and gear because of the questionable reliability of estimated values for vessel speed and the lack of correlation between vessel size and power.

When net size is plotted against vessel horsepower, a vague correlation appears, suggesting a tendency for net size to be proportional to vessel horsepower in both single- and double-rigged categories. Examination of the actual net size-horsepower relationships, how-

ever, shows that none of those reported fall within the mean expected. Variation is more evident in single-rig combinations than in double-rig combinations, owing, no doubt to the larger range of values presented by the former group. Three single-rigged vessels, for example, are included in the survey with engines of the same horsepower. One of these drags a 60-foot net, one an 83-foot net, and one a 96-foot net. Extremes for the whole sample (double and single rigs) are represented by a single-rigged, 80-hp. vessel dragging a 72-foot net and a double-rigged 170-hp. vessel with two 62-foot nets. Despite the small sample, especially of single-rigged vessels, lack of conformity to any standard appears evident.

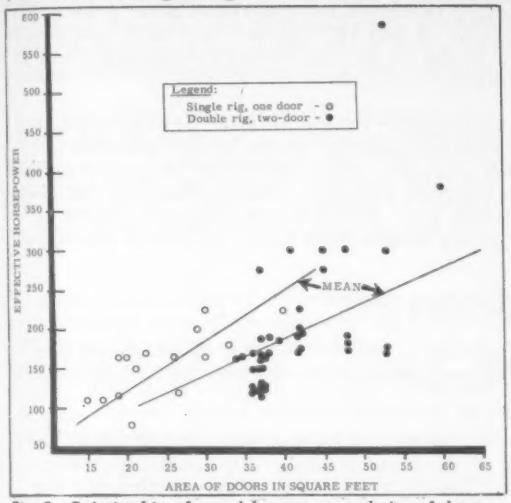

Fig. 5 - Relationship of vessel horsepower and size of doors. Despite a general tendency for door size to increase with horsepower, little standardization is evident.

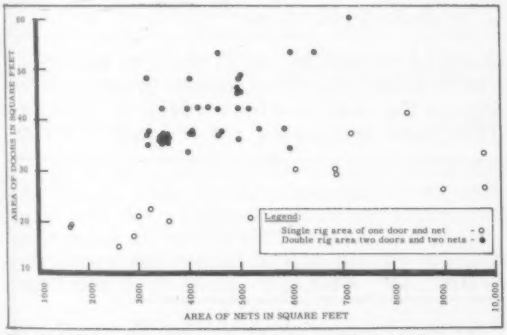
Legend:
Single rig area of one door and net - ○
Double rig area two doors and two nets - ●
AREA OF DOORS IN SQUARE FEET
AREA OF NETS IN SQUARE FEET

Fig. 6 - Relationship of door size and net size. The lack of correlation between these two factors is thought to be due, in part, to a tendency to retain a constant net height regardless of net size, and to the relatively constant 2.4:1 ratio of door length to door height. A tendency for the doors used by double-rigged vessels to be larger than those used with the same-sized nets by single-rigged vessels is shown.

it follows that door size should not be expected to vary proportionally with net size.

Figure 6 shows, in a fairly well-defined manner, that double-rigged vessels use larger doors than single-rigged vessels for nets of equivalent size. Table 1 shows that there is a mean difference of three-quarters of a

HORSEPOWER AND DOOR SIZE: In determinations of possible correlation between horsepower of the vessel and the size of doors used (fig. 5), the area of one door is used for single-rigged vessels and the area of two doors is used for double-rigged vessels. A much closer relation is demonstrated between horsepower and the doors used with single-rigged vessels than between these factors with double-rigged vessels. In both cases, however, the deviation from the mean shows a variance sufficiently large that only the vague statement, that with increase in horsepower the size of the doors tends to increase, is permitted.

DOOR SIZE AND NET SIZE: When the size of the doors is plotted against the size of the net (fig. 6), a lack of conformity is evidenced that is even greater than is shown when horsepower is plotted against door size. For these determinations, the combined area of one door and the attached net was used for single-rigged vessels, and the combined area of two doors and the two attached nets was used for double-rigged vessels. Net area is calculated as the square of the length of the corkline. A decided random pattern results from plotting these areas. This may be explained by the tendency, normal among shrimp fishermen, to maintain a relatively constant wing height regardless of the size of the net. Since the doors are normally constructed so that they are a little more than twice as long as high, since the height of the wings is dependent on the height of the doors, and since the height of the net does not increase with the size (corkline length or area) of the net,

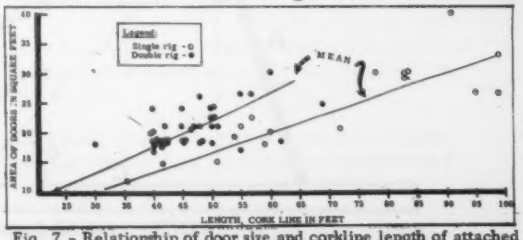

Fig. 7 - Relationship of door size and corkline length of attached nets. A clearcut tendency for double-rigged vessels to use larger doors on nets of equivalent size is shown. Great variation in the two factors is evident.

foot (26 percent) in corkline length per square foot of door area between combinations used by double-rigged and single-rigged vessels. This relationship is shown more clearly in figure 7. Use of larger doors by operators of double-rigged vessels may relate to an attempt to compensate for the additional drag of pulling two nets and for the subsequent decrease in speed and spreading power.

Figure 7 also shows the great variation existing in the relation between door area and corkline length. Extreme examples combine doors of 18 and 18.5 square feet with nets measuring 30 and 62 feet along the corkline on one end of the range, and doors measuring from 17 to 26 feet in area with nets measuring 55 feet along the corkline at the other.

MISCELLANEOUS CORRELATIONS: Little correlation exists between bridle length and net size, except that, as stated previously, in all cases where the bridle length exceeds 25 fathoms, the attached net exceeds 51 feet in corkline length. Warp diameter, too, bears little relation to the size of the net, although extreme examples combine $\frac{1}{4}$-inch-diameter cable with a 40-foot net and $\frac{5}{8}$-inch-diameter cable with a 91-foot net. Within those extremes there is little uniformity or proportionality. Differences in leg length have been discussed elsewhere and are shown in figure 3.

ANGLE OF TRAWL-DOOR SET

Data received from the 58 vessel operators were also studied to determine whether or not there is a correlation between the high catches obtained fairly consistently by highline vessels and a standard angle of set.

The angle of trawl-door attack is preset aboard the vessel by adjusting the ratio of the length of the front chains of the door to the length of the back chains. The shearing power necessary to offset the drag of the trawl and create the desired wing spread is directly related to the area of the doors and the speed of the vessel. The ideal condition, in the door-net relationship, is to obtain the greatest possible spread of the wings without deforming the net opening or causing excessive drag. Because information on vessel speed is not reliable, only the area of the doors and the angle of door-set can be considered here.

The angles at which the doors are set was measured by plotting three sides of the triangle formed by the front and back chains and the door itself (fig. 8) on scaled graph paper. A line drawn from the centerline, or midpoint between the front and back edges of the door, through the apex of the chains forms angle "a." This angle defines the set or angle of attack

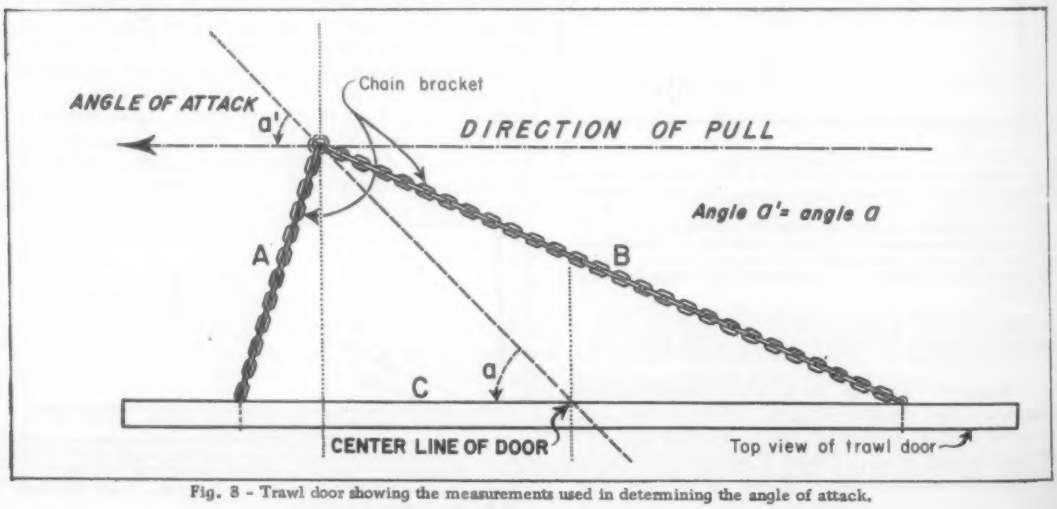

Fig. 8 - Trawl door showing the measurements used in determining the angle of attack.

that the door will assume when pulled through the water. The angles were read directly with a protractor. Where the front and back points of chain attachment were not placed at equal distances from the edges of the door, the centerline was shifted accordingly.

The angle values obtained are not representative of the true angles at which the doors would fish under actual operational conditions because they do not take into consideration the additional deflective force of the plowing effect exerted by the doors as they move over, and partially through, the bottom or the straightening effect exerted by the net on the doors. Nevertheless they are sufficiently accurate to provide concise information on the range of values and possible over- and under-optimum settings.

The values calculated for the angle of door set for all of the vessels in the sample range from 31 to 56 degrees (a variation of 25 degrees), with a modal interval of from 40 to 45 degrees, and a mean figure of 42.5 degrees. Omitting the extreme values on either end of the range as being particularly subject to error, still leaves a range of 35 to 52 degrees, which represents a variation in practice of 17 degrees for 52 vessels. The variation from the mean is uniformly scattered within the range with only a slightly greater grouping indicating the mode.

The angle of trawl door set not only varies to a greater degree among the double-rigged vessels than among the single-rigged vessels, but also tends to be less than the average angle in a great proportion of the cases. Since no correlation can be found between the size of the doors and the angle of set, this smaller angle cannot be ascribed directly to the use of larger doors. The possibility does exist, however, that the larger doors, used by the double-rigged vessels are set with a smaller angle to minimize the additional spreading effect of superfluous surface areas.

In all but one case, the reports showed that the upper front and back chains are set longer than the lower chains. The single exception reported no difference. Of the reports showing a difference, 31 percent showed one chain link more in the upper chains and 69 percent showed 2 chain links more. The shorter chain length on the lower chains tends to tilt the door outward. A compensating inward tilt is achieved by the counterweight of the chains and the bridles or cables. Presumably, when fishing in relatively shallow water, the outward inclination of the doors will be more pronounced than when fishing in deep water because the lighter weight of a decreased amount of warp has less effect on the doors.

CONCLUSIONS

Evaluation of the information extracted from survey data indicates the existence of general trends and similarities within the industry, but the consistent deviation from the mean in most of the categories does not allow extraction of conclusive statements concerning characteristics of "standard" vessels and gear. Moreover, the wide range of fishing practices and gear usage uncovered in this survey indicates an unsystematic method of combining closely interrelated features.

These deviations from a mean characteristic and the wide ranges in use and practice point to the need for a more thorough evaluation of existing fishery practices for the purpose of establishing effective standards for gear design and usage.

GENERAL TRENDS: (a) A tendency for a close correlation between vessel length and tonnage (uniform hull design), not accompanied by any tendency toward application of power.

(b) An almost exclusive use of Diesel engines for main-engine power and a preponderent use of engines manufactured by only 2 manufacturers.

(c) A tendency to favor flat trawls for use with double-rigged vessels, and a lack of any tendency toward choice of nets of one design for use with single-rigged vessels.

(d) A tendency for larger nets (60 feet and larger) to be constructed of synthetic twines.

(e) An almost universal use of tickler chains.

(f) Use of more floats on muddy than on sandy bottoms and progressively more floats on balloon than on semiballoon or flat trawls.

(g) Use by double-rig vessel operators of 20- to 25-fathom bridles on most nets regardless of net size.

(h) Use of longer legs (door-to-wing connections) in single-rig gear.

(i) Use of doors that invariably are constructed slightly more than twice as long as high.

(j) A tendency for net height to remain constant regardless of the size of the net.

(k) A lack of uniformity in angle of trawl-door set.

(l) A tendency for setting lower door chains from 1 to 2 links longer than the upper chains.

AREAS NEEDING IMPROVEMENT: The need for more study leading to greater standardization is evident. The following factors are among those that are currently unknown and that must be determined if choice and use of gear and vessels is to be put on a rational, scientific basis:

(a) Optimum horsepower requirement for specific hull designs.

(b) The relation existing between horsepower and net size so that the most efficient combination can be chosen.

(c) Exact and simple methods of measuring dragging speed and the most effective speed under varying conditions to assure optimum fishing power.

(d) The most effective door- and net-size combinations so that the optimum spread of the net can be achieved with a minimum door size, the least distortion of the net, and the least resistance.

(e) The best angle of attack of the doors under different fishing conditions, bottom type, and topography so that the greatest fishing power can be extracted from the gear.

The last two items (d and e) will be incorporated in the underwater studies of shrimp trawls which are to be carried out by the Bureau in the Gulf and South Atlantic Region in the near future.

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REPORT OF "JELLIED" FLOUNDER FROM GULF OF MEXICO

By Travis D. Love*

ABSTRACT

The jellied meat of flounder was examined chemically and microscopically for abnormalities. None was found other than the disappearance of separate muscle fiber.

INTRODUCTION

Other investigators have reported the occurrence of a "jellied" condition of the muscle tissue in certain species of commercial food fish. Templeman and Andrews (1956) reported a "jellied" condition in American plaice (Hippoglossoides platessoides) from the Grand Banks area characterized by normal odor, low protein, extremely high moisture, and extremely high drip losses. These investigators surmised that the condition might be due to protein impoverishment following spawning in the food-poor cold waters of the Grand Banks. A report of the Food Fish Investigation Board (1952) listed "milky" hake with a white pasty meat, yet normal otherwise, occurring during a catch from Mauretanean waters in 1950. Microscopic examination showed numerous yeast-like bodies believed to be the spores of the parasite Chloromyxum thiyrsites. This paper states that Australian investigators report a strong proteolytic enzyme secreted by the parasite which is capable of producing the "milky" or "pasty" condition. Tsuchiya and Kudo (1957) report the "jellied" condition in swordfish with the parasite Chloromyxum noted in the muscle tissues. They report that low volatile basic nitrogen indicates that the meat is not to be considered spoiled. These investigators found that freezing causes a diminution of the numbers of the parasites in the meat. Between 1,100-1,400 parasites per 0.01 milliliter of muscle juice were noted after 2 weeks of frozen storage and only 200-300 remained after 15 weeks at 0° F. Fletcher and Shewan (1951) reported milkiness of Mauretanean hake and that its probable cause was the parasite Chloromyxum sp. found in the jellied meat. They also noted the fish to be organoleptically normal with respect to flavor and odor. A. Mayer (1952) reported the fillets of Icelandic catfish to show white patches near the bones and to contain a sporozoa believed to be a myxo-sporidium.

Bullis (1958) in an unpublished observation noted that Gulf of Mexico flounder, Paralichthys squamalentus, caught in the North Central Gulf in 20-50 fathoms of water and frozen immediately after catch exhibited a soft jelly-like consistency on thawing and cleaning even though the fish were normal with respect to odor and flavor. The purpose of this paper is to report chemical and microscopic examinations made of other samples of this species.

OBSERVATIONS

In 1960 the M/V Oregon, exploratory fishing vessel of the U. S. Bureau of Commercial Fisheries, fishing off the mouth of the Mississippi River in 20-30 fathoms of water for shrimp, took 75-100 pounds of mixed sizes of flounder, P. squamalentus, which appeared normal in all respects. These fish were frozen in the round within an hour and, a few days later, were transferred to the 0° F. storage freezer at the Pascagoula Technological Laboratory. Thirty days afterward these fish were thawed overnight in the controlled thawing room of the laboratory at 37° F. On examination the fish were of mushy consistency. The cut surface of the muscle tissue was opaque, milky, and jelly-like with a thick slimy exudate appearing on standing. A careful organoleptic examination by several trained members of the Technological staff was made, and all members of the panel judged the odor normal.

A careful microscopic examination of the jellied meat was made using both widefield and bacteriological microscopes at several magnifications. Tissue preparations, stained by the

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Gram's method, and unstained slides revealed a smooth homogenous jelly-like mass with complete absence of all tissue structures. No spores, cysts, or parasites of any type were noted. It is suggested by other researchers in the field that sporulation of the vegetative forms may have been prevented by the short time elapse between catch and freezing aboard ship.

Tissue slides from two of the fish that appeared to be firmer than others showed some faint "ghost" appearance of muscle fibers which soon disappeared on standing near the warm microscope lamp. Several members of the staff definitely noted that this autolysis was rapidly progressing in the muscle tissue while the fish were being cut and examined in a warm room. Firmer fish that showed faint muscle fiber arrangement on cutting soon degenerated into a wet slimy jelly-like mass unaccompanied by any abnormal odors.

Table 1 - Comparative Analytical Data on "Jellied" and Normal Flounder

Sample Analyzed	Protein	Moisture
	. . .(Percent) . . .	
Softest flounder (avg. of 6 samples) . . .	21.20	76.9
Firmest flounder (avg. of 2 samples) . .	21.25	77.2
Normal flounder from other sources . . .	21.00	78.0

Protein (Nx 6.25) and moisture determinations (A.O.A.C. 1960) were made on two samples of the fish. Sample A consisted of six 4-ounce fillets from the softest fish and B consisted of two 8-ounce fillets from two of the firmest fish. Results are shown in table 1.

DISCUSSION

The protein and moisture appear normal for flounder fillets of this type. The question arises as to the low protein reported by other investigators. Should the enzyme autolyze the tissues to jelly-like consistency we would expect the same nitrogen values by the Kjeldahl method unless considerable ammonical-type decomposition occurred. The "jellied" flounder examined in this laboratory suffered very little drip loss prior to the cutting of fillets for samples.

SUMMARY

"Jellied" flounder having normal protein and moisture are reported from the Gulf of Mexico. No parasites could be detected on microscopic examination.

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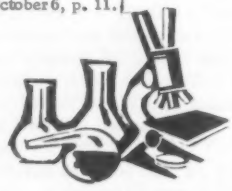

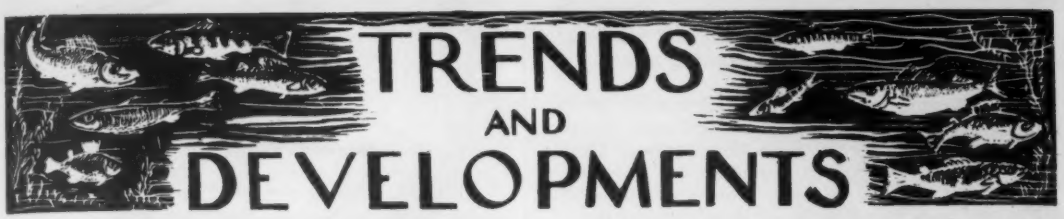

Fishing Vessel and Gear Developments

EQUIPMENT NOTE NO. 9--THE SURF-CLAM FISHERY OF NEW JERSEY:

The surf-clam fishery of New Jersey currently produces over 20 million pounds of meats annually (table 1). This fishery, once primarily a bait fishery, has achieved national importance as a primary source of supply for minced, chowder, and frying clams. The substitution of surf clams (Spisula solidissima) for soft clams (Mya arenaria) has been conducive to the development of the fishery.

Table 1 - Surf Clam Landings, New York and New Jersey1/

Year	New York	New Jersey
	(1,000 Lbs. of Meats)	
1960	721,453	23,382,157
1959	514,381	20,164,000
1958	429,400	12,461,900
1957	1,599,100	15,224,200
1956	2,368,300	11,583,500
1955	2,026,400	8,277,500
1954	3,359,700	6,876,900
1953	3,345,400	6,878,100
1952	4,138,100	6,418,300
1951	4,046,100	6,419,400
1950	3,184,000	4,298,700
1949	4,903,700	407,700
1948	3,520,900	167,300
1947	3,314,700	156,600
1946	6,482,500	Not available
1945	3,982,200	526,500
1944	920,000	14,700
1943	475,000	170,100
1942	340,000	413,200
1941	Not available	Not available
1940	660,000	573,000

1/From "Fishery Statistics of the United States," U. S. Fish and Wildlife Service, 1940-1960.

UTILIZATION OF SURF CLAMS

Surf clams are marketed as canned clam chowder, minced clams, and as "strippings," the latter substituting for soft clams in certain instances. Strippings are made by a mechanical process in which the shucked meats (foot portion of the clam) are thoroughly eviscerated and washed, then passed through a machine that cuts the meats in narrow strips. By stripping, the meat of the surf clam is reduced to small pieces suitable for frying.

LOCATION OF THE FISHERY

The surf-clam fishery for food, as distinguished from the bait fishery which for many years was an important source of bait to cod fishermen and the party boat fishermen, first developed in the New York coastal area in World War II. It soon spread to more productive beds off the New Jersey coast (Atlantic States Marine Fisheries Commission, 1958). Landings were made at various ports along the coasts of New Jersey, Delaware, and Maryland. In 1950, a plant for processing surf clams was opened in Wildwood, N. J., and the New Jersey-Delaware coasts became the center of the fishery. Today, owing to the presence of readily-accessible beds of clams nearby, the fishery is conducted almost entirely out of Point Pleasant, N. J., and most New Jersey landings are made in that port.

Fishing is conducted in an area approximately 15 to 25 miles southeast of Point Pleasant. The more productive clam beds now fished are in depths ranging from 60 to 90 feet. Vessels make individual trips of less than one day and usually fish four days a week. The daily catch is either shucked and shipped by truck as fresh clams to other plants for further processing, or shipped whole as shell stock.

FISHING GEAR

There are about 30 vessels engaged in the New Jersey surf-clam fishery. These range in length from 65 to 90 feet, are Diesel-powered, and are mostly of Florida shrimp-boat design (fig. 1). An average

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crew consists of the captain and two fishermen. Vessels are pilothouse-controlled and rigged with a special towing bit and steel outrigger boom for retrieving fishing gear.

The fishing gear (figs. 2-5) consists primarily of a sled dredge, a centrifugal pump, and a 5-inch (internal diameter) hose. The hose is permanently attached to the dredge during fishing operations. Sea water is pumped under pressure through this hose to the dredge manifold where it is ejected through a series of nozzles into the ocean floor. By

Fig. 1 - A typical Diesel-powered surf-clam vessel. Vessels in use range from 65 to 90 feet in length. An auxiliary Diesel engine is mounted below deck, aft, to drive a 5-inch centrifugal pump that supplies water for the hydraulic dredge.

Fig. 3 - The steel cutting edge or knife is set to cut from $6\frac{7}{8}$ to 8 inches below the dredge shoes.

Fig. 2 - Hydraulic Jet Dredge. Dredges consist of two basic parts, the dredge section proper and the sled section. The dredge section (forward) has a manifold of 5- or 6-inch pipe with a series of horizontally-spaced nozzles aimed down, back, and immediately forward of the cutting knife. Water pressure is maintained at about 70 pounds with a volume of from 1,000 to 1,500 gallons per minute. The sled section is attached to the dredge section to retain the clams washed back from the dredge.

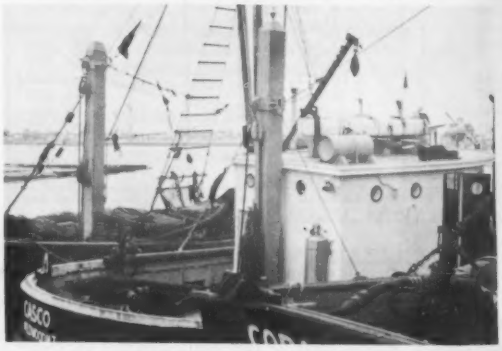

Fig. 4 - The towing bit is set from the keel and is high enough to allow the dredge towline to pass clear of the stern. The towline is reeved through a snatch block that is fastened to the towing bit before holding turns are applied to reduce chafing of towline. Hose used for jetting measures 5 inches in internal diameter and is constructed of heavy-duty collapsible nylon-reinforced rubber. Sections of the hose (seen along the rail) are fastened together with pressure clamps over aluminum sleeves. The hose is always longer than the towing warp.

Fig. 5 - When fishing, the outrigger keeps the dredge section outboard. For unloading the clam catch, the sled section with the chain bag is brought inboard.

Fig. 6 - Clams are culled and stowed in bushel bags on deck aft. Vessels make 15- to 30-minute drags, which average from 11 to 23 bushels per drag.

proper direction of the nozzles, the hydraulic action of the water washes the sand from over and around the clams. This action allows the deep-set knife blade to pass under the clams and lift them from the bottom so that they pass back into the sled section.

Surf clams (fig. 6) because of their size, relatively thin shells, and ability to bed in hard, coarse-grained sand, present a problem in dredging. The non-hydraulic dredges, used in the hard clam (Venus mercenaria) fishery of southern New England, tend to crush the surf clams when forcing them from the bottom. The high-pressure jet clam dredge was, therefore, developed specifically for harvesting surf clams.

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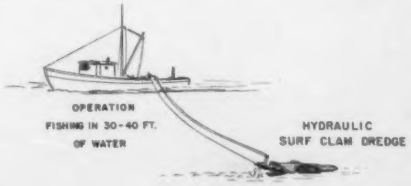

Alaska

STATE SUPREME COURT RULES ON CASE WHICH AFFECTS USE OF FISH TRAPS BY INDIAN COMMUNITIES:

On June 2, 1961, the Alaska Supreme Court issued its opinion on the trap case (Metlakatla Indian Community et. al. vs. State). This case revolves around the right of Indian Communities to use fish traps in Alaska. Question involves the rights of three native communities to operate traps, since the State of Alaska Constitution and State laws prohibit traps and the State served notice that it would enforce the law.

Brailing a salmon trap in southeastern Alaska. This type of gear is now banned by Alaska State laws.

The U. S. Department of the Interior, following passage of the Statehood Act, issued regulations prohibiting traps except for operation of 11 traps by 3 native communities. This was done on the basis that the Statehood Act secured to the Indians certain fishing rights.

Native communities filed suit in the U. S. District Court to enjoin the State from enforcing the trap prohibition. Suits were dismissed.

Justice Brennan of the U. S. Supreme Court (on July 11, 1959) granted a stay pending appeal to the U. S. Supreme Court. That Court heard arguments and then on June 20, 1960, handed down a decision in Metlakatla Indian Community vs. Egan and the two cases related to it. By a 6 to 3 decision, that Court announced that it would refrain from deciding the issues presented to it on their merits in order to afford the Alaska Supreme Court the opportunity to rule on the questions open to it for decision.

The State Supreme Court on June 2, 1961, affirmed the judgment of the U. S. District Court in dismissing the suit. Undoubtedly the case will go back to the U. S. Supreme Court and it is believed that Justice Brennan's stay continues in effect. The stay means that the three Indian communities will continue to use the fish traps.

The principal points of the State Supreme Court decision are: (1) State constitution: "The State and its people further disclaim all right or title in or to any property, including fishing rights, the right or title to which may be held by or for any Indian, Eskimo, or Aleut, or Community thereof, as that right or title is defined in the act of Admission."

(2) Statehood Act does not define the right or title. It reads: "As a compact with the U. S. said State and its people do agree and declare that they forever disclaim all right and title.... to any lands or other property (including fishing rights), the right or title to which may be held by any Indians, Eskimos, or Aleuts (hereinafter called natives) or is held by the U. S. in trust for said natives,... ."

The State Court opinion recognizes a different status for the Metlakatla Indian Community, referring to it as "the only fishing privilege held by a native community at the time of enactment of the Alaska Statehood Act." However, it dismisses this privilege as a "temporary privilege" which disappeared with statehood.

American Fisheries Advisory Committee

OCEANOGRAPHIC RESEARCH STRESSED AT MEETING:

Utilization of the sea for the benefit of the human race was the theme of the 12th meeting of the American Fisheries Advisory Committee held in the Department of the Interior Building in Washington, D. C., May 22 and 23, 1961.

The first session was opened by Secretary of the Interior Stewart L. Udall, who

pledged the support of the Department in making research of the sea one of the outstanding programs of the New Frontier. Secretary Udall asked not only increased efforts in learning the biological, chemical, and physical secrets of the sea, but called for increased technological efforts in making the vast protein resources of the sea available to the undernourished peoples of the world.

Besides general expressions of approval of the stepped-up program of oceanographic research which many Federal agencies are planning, the Committee recommended that the research program on artificial propagation of oysters and clams be continued and that there be an intensified program to discover ways to put to beneficial use the large stocks of underutilized fish in the Great Lakes.

Secretary Udall urged the advisory group to broaden its advice and counsel to the Department "to include counsel on all fisheries matters."

Donald L. McKernan, Director of the U. S. Bureau of Commercial Fisheries, gave a detailed report on "What Lies Ahead" from the Bureau standpoint. He re-emphasized the necessity of learning how to use the sea for the benefit of mankind. He pointed out the stake America as a Nation has in the oceans of the world and then discussed what the American fishing industry can do in the huge task of supplying nutrients to the people of this Nation and of the world. Interwoven with his remarks were instances of the Bureau of Commercial Fisheries' responsibility to the American fishing industry, in helping the industry to make maximum sustained harvests, with a minimum of time and effort.

Specifically, McKernan said that those concerned with the fishing industry must understand the sea and its effect upon the distribution and abundance of fish; they must know the life history of many species and all there is to know about the dynamics of fish populations; they must learn how to predict abundance of a species, know their movements, and how and when to catch them most economically; know more about the upwellings in the sea, their effect upon the food chains, and how to protect the resource from predators which at times plague it; and finally there must be more technological knowledge on full utilization of the products of the sea.

The importance of "vital statistics" and additional knowledge of the sea in predicting abundance and distribution of fish was stressed by Dr. J. L. McHugh, Chief of the Bureau's Division of Biological Research. McHugh stressed the damage which pollution can do to fisheries, especially in estuaries. He pointed out the damage done by hurricanes, not only the physical damage, but the havoc sometimes wrought by the churning of waters, the elevation of bottom water to the top, the introduction of long-settled chemicals into surface waters, and their sometimes deleterious effect upon fish which are not inured to that particular type of water. He pointed out the value of knowing how many fish of a given species are caught, the size and age characteristics, the hours of the catch, and numerous other bits of information about landings which, over a period of time tell a story to the fishery biologist.

The advantage of a small pilot plant to help the fishing industry study problems of mass production of fish flour was discussed. It was pointed out that fish flour is equal to dried egg solids in amount and value of protein and that dried eggs have been accepted as the standard for determining protein quality.

The American Fisheries Advisory Committee has 20 members, appointed by the Secretary of the Interior. Frank P. Briggs, Assistant Secretary of the Interior for Fish and Wildlife, is the chairman of the group, and presided at the sessions. The first meeting of the Committee was held in Washington in April 1955. Recently the Committee has been meeting annually instead of semi-annually.

The Advisory Committee was authorized by the Saltonstall-Kennedy Act passed in 1954. This Act provides that an amount of money equal to 30 percent of the funds received in import duties on fishery products be made available to the Department of the Interior to promote the free flow of domestically-produced fishery products into channels of trade, to conduct biological, technological, and other types of research necessary to aid in the harvest or utilization of fish and fishery products. The Saltonstall-Kennedy funds for these purposes vary from $4 to $6 million a year.

Antarctic

MARINE RESEARCH INCLUDED IN STUDIES TO BE CONDUCTED BY VESSEL ON PERMANENT STATION:

The National Science Foundation will operate its first research ship on more or less permanent station in Antarctic waters. The vessel, which will be open to qualified scientists in much the same way that institutions such as the Brookhaven and Oak Ridge national laboratories are, is a 3,000-ton converted Navy freighter named the Eltanin. A ship with a reinforced hull, last used for carrying supplies to radar stations in the Arctic, she should be ready to sail on her next mission by the end of the year.

The Eltanin will have accommodations for a scientific party of 38 and a crew of about 40. The Foundation will operate the vessel by inviting proposals for work aboard her from universities, Government agencies, and other interested institutions. Scientists and crew will be rotated by air from the United States. The ship itself will remain in the far south for two to three years at a time.

The Foundation's unusual venture was born of the need for increased studies of Antarctic waters. In recent years most Antarctic work has been done on the ice. Only one U. S. oceanographic institution, Columbia University's Lamont Geological Observatory (whose schooner Vema is currently on her sixth cruise in Antarctic waters in six years), has had substantial experience in research in Antarctic seas. Lamont is among eight institutions cooperating in designing equipment for the Eltanin, which will be fitted out for research in meteorology, cosmic rays, radio propagation and geomagnetism, as well as in oceanography, marine geophysics, and marine biology. (Scientific American, May 1961.)

Atlantic Marine Game Fish Research

SURVEY OF MARINE SPORT FISHING NEAR COMPLETION:

A survey of marine sport fishing, which the U. S. Bureau of the Census is conducting under a contract with the U. S. Bureau of Sportfish and Wildlife's Atlantic Marine Game Fish Research Center at Sandy Hook, N. J., was nearing completion early this year. The survey is based on a nationwide sampling of people who engaged in salt-water fishing during 1960, and will provide estimates of the quantities of fish caught, species, fishing methods, and regions. Analysis of the data is near completion and a report is to be submitted at the end of the 1961 summer.

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TWO APPROACHES TO COVER RANGES OF MARINE GAME FISH:

Marine biologists are constantly troubled by the overwhelming problem of how to cover, in their field programs, the entire ranges of species which they study. The Sandy Hook Center in the first quarter of 1961 announced two approaches to attacking this problem:

1. By using the services of qualified amateur skin divers, selected for education and experience as underwater observers, to conduct, through their clubs, systematic observations of coastal fishes. The type of activity will vary with different clubs. One club of divers which has formed "Research Divers Society" is particularly interested in tagging with darts. They will do this in close cooperation with state fishery agencies and, as required, with the Sandy Hook Center. Another group being sponsored is "The Littoral Society," which parallels in its conception the Audubon Society, and, like that organization, will conduct a periodic synoptic census of shore fishes. Several meetings were held at the Sandy Hook Center to plan the first count which is scheduled for September 4, 1961, and also to plan a limited summer program of natural history observation. At least two divers have volunteered their services to the Center and will work on behalf of the Littoral Society for several weeks this summer.

2. To understand the vagaries in the occurrences, distribution, and abundance of fishes, it is essential to have synoptic and systematic pictures of the physical and biological features of their environments throughout their ranges. This is possible only by cooperation among all marine laboratories in making the necessary observations. The Sandy Hook Laboratory Director has presented to biologists in three regional meetings of the Atlantic States Marine Fisheries Commission Bio-

logical Committee, the idea of conducting periodic multipleship surveys in a program to be called the Atlantic Shelf Environmental Campaign. This would take place in 1963 or 1964. The proposal has been unanimously recommended for formal presentation to the forthcoming annual meeting of the whole Commission. After the Commission approves the plan, funds are available from an Office of Naval Research (ONR) grant to pay travel expenses of five scientists who will attend the first meeting to advise in designing the campaign.

California

UNDERWATER CHAMBER WITH GLASS PORTS ADDED TO RESEARCH VESSEL "ALASKA":

Four one-inch-thick crystal-glass viewing ports were placed in the hull of the research vessel Alaska of the California Department of Fish and Game. The ports are on the starboard side and reveal submarine goings-on into a watertight compartment that was built within the ship. Viewers enter this compartment through a hatch opening through the main deck. Thus, the ship is safe and seaworthy, even if the compartment fills with water.

Fig. 1 - Research vessel Alaska operated by the California Department of Fish and Game.

The chamber is unique in that it is amidships and provides wide-angle viewing in relatively spacious comfort.

Admittedly, the idea of an underwater viewing-port is not new. Almost 100 years ago, Jules Verne provided viewing windows for the imaginary Nautilus in his novel, "Twenty Thousand Leagues Under the Sea." Diving bells, bathyspheres, bathyscapes, and glass-bottom boats have utilized similar "looking-glasses" and enabled man to see and study the denizens of the deep. Recently, the U. S. Bureau of Commercial Fisheries fitted one of their vessels, the Charles H. Gilbert, with underwater ports to observe tuna behavior in the mid-Pacific.

Fig. 2 - Underwater chamber with glass ports on the M/V Alaska is located on the starboard side. Note steel plate reinforcement. Photo was taken when vessel was in drydock.

Quick and positive identification of fish schools will be one of many uses of the new underwater eyes on the Alaska. On a recent field trial, biologists observed a flock of sea birds actively feeding nearby. A single pass through the area while looking through the viewing ports revealed that they were working on a school of anchovies.

Fig. 3 - Diver-biologist of the California Department of Fish and Game working in conjunction with observers inside the underwater chamber of the Alaska. White plastic sheet used to write messages and record observations while in the water.

The viewing chamber will provide a direct means of observing underwater fauna without getting wet. By observing fish behavior, biologists hope to develop more efficient collecting devices. They will also be provided a better look at schooling pelagic fish, such as sardines, in their natural environment.

To date, the Alaska has been used to collect samples of sardines for abundance and distribution studies. These have been attracted to the vessel by a light suspended over the water at night. When a sufficient quantity has been attracted they are caught with a special blanket net developed by Department personnel. At times, however, the sardines remain deep and are beyond the range of the net. Often, by altering the intensity of the light, it has been possible to lure these deep schools to the surface. Occasionally too, "wild" schools are encountered and these are always difficult to catch with the net.

By applying the knowledge gained from observing the behavior of sardines through the viewing ports, the biologists feel certain that many of their misses will be changed to hits. What holds for sardines should hold for other fishes too. (Excerpted from article by Doyle Gates, in Outdoor California, May 1961.)

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SHRIMP STUDY OFF CALIFORNIA COAST CONTINUED:

M/V "N. B. Scofield" Cruise 61S2-Shrimp: The coastal waters from Brookings, Oreg., to Avila, Calif., were surveyed (March 13-April 28, 1961) by the California Department of Fish and Game research vessel N. B. Scofield for concentrations of pink shrimp, Pandalus jordani. Other objectives were to determine size, sex, and weight of the shrimp, to obtain bottom temperatures in the areas explored; and to determine species of fish and invertebrates and weight of all species caught incidentally during shrimp fishing operations.

The strong northerly and southerly winds accompanied by heavy seas greatly hampered trawling operations during most of the cruise. A total of 115 tows was made, using a 20- by 8-foot beam trawl with a cotton net of $1\frac{1}{4}$-inch mesh. The tows were: 34 in the area from the California-Oregon border to Rocky Pt.; 15 from Bear Landing to Westport; 55 from Salt Point to Bodega Head; and 11 from Pt. San Luis to Pt. Sal.

In the area from the California-Oregon border to Rocky Pt., the heaviest shrimp concentrations were off of the Klamath River in 66 to 68 fathoms and in the vicinity of Redding Rock in 72 to 76 fathoms. Tows made off of the Klamath River produced an average of 1,155 pounds of shrimp per hour. The average count was 165 per pound, heads on. From the area off Redding Rock, shrimp were taken at a rate of 715 pounds per hour. Here the count was 140 shrimp per pound. Three tows in the area off of Pyramid Pt. failed to yield heavy concentrations of shrimp. In this area the catch was 44 pounds per hour of shrimp averaging 129 per pound, heads on.

In the area from Bear Landing to Westport, the best concentrations were found in a bed extending from Bear Landing to Cape Vizcaino, approximately $2\frac{1}{4}$ miles wide. Of the 15 tows in this area, 7 produced 1,322 pounds per hour, from depths of 61 to 80 fathoms. These shrimp averaged 128 to the pound, heads on.

In the area from Salt Point to Bodega Head, there were two widely separated concentrations. One was between Salt Point and Fort Ross at 57 fathoms. Here shrimp were caught at a rate of 370 pounds per hour and had a count of 95 per pound, heads on. The other concentration was between the Russian River and Bodega Head, in 42-49 fathoms. Shrimp were taken in this area at an average rate of 149 pounds per hour and had an average count of 150 per pound, heads on.

Two main shrimp concentrations were separated by a narrow area of low production (73 pounds per hour). The northernmost of these beds yielded 245 pounds per hour, at a count of 51 per pound; and the southern bed produced 555 pounds per hour at a count of 57 per pound. These two concentrations were between Pt. San Luis and Pt. Sal in 110 to 127 fathoms.

Approximately 50 shrimp were taken from each tow that contained shrimp (92 of 115 tows) and these were sexed, sized, and weighed. The majority of the females had completed spawning. Very few still contained roe. This was especially true in the Avila-Pt. Sal area.

A total of 76 bathythermograph casts was made--the majority over shrimp beds.
Note: Also see Commercial Fisheries Review, June 1961 p. 17.

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MIDWATER TRAWL TESTED IN CATCHING SALMON FINGERLINGS:

M/V "Nautilus" Cruise 61-N-2-Salmon: A midwater trawl, with a 15-foot square opening, was tested in San Francisco Bay (March 13-16, 1961) by the California Department of Fish and Game research vessel Nautilus to become familiar with its operation and prepare for salmon studies. The mouth of the net is held open by 4 quarter doors acting as kites. The trawl may be fished at the surface by using only the 4 quarter doors, or may be fished deeper by placing 2 small otter doors 150 feet forward of the net.

Sets were made using the quarter doors alone and using the otter doors in conjunction with the quarter doors. Various speeds and depths were used, so that operations would be familiar under different conditions. Enough sets were made to develop a smooth technique in handling winches, otter doors, and the net itself.

M/V "Nautilus" Cruise 61-N-3-Salmon: The midwater trawl operations were continued (April 10-14, 24-28, 1961) in the Carquinez Straits to (1) capture marked salmon fingerlings; (2) determine time of day or night that salmon fingerlings may be captured; (3) determine areas where salmon fingerlings may be captured; and (4) standardize trawling methods for future operations.

Eighty-five tows were completed. A total of 807 king salmon (Oncorhynchus tshawytscha) finglerings were captured, 8 of which were marked. The marked salmon were from a release made in San Pablo Bay seaward of the fishing area. Of the 20 rainbow trout (Salmo gairdneri) taken, 2 had been marked and released into the American River. The most abundant species taken, incidentally, in the area fished were northern anchovy (Engraulis mordax) and Pacific herring (Clupea pallasi). Other species captured included striped bass (Roccus saxatilis), American shad (Alosa sapidissima), splittail (Pogonichthy macrolepedotus), jack smelt (Atherinopsis californiensis), staghorn sculpin (Leptocottus armatus), Sacramento smelt (Spirinchus thaleichthys), Pacific tomcod (Microgadus proximus), Northern midshipman (Porichthys notatus), pipefish (Syngnathus griseo-lineatus), starry flounder (Platichthys stellatus) and carp (Cyprinus carpio).

The largest numbers of salmon fingerlings were caught between 7 a.m. and 5 p.m. The best catches of 30, 33, and 36 salmon fingerlings per tow were made between the hours of 10 a.m. and 2 p.m. Between 8 p.m. and 4 a.m., catches averaged about 3 salmon per tow.

Catches were similar in the center and each side of Carquinez Straits, indicating a uniform distribution of salmon fingerlings throughout the sampling area. Catches were also similar for tows made with and against the current.

A standard procedure was worked out for subsequent cruises. This plan calls for alternating tows between upstream and downstream and between the south shore, center, and north shore of the straits. Each tow will be for 20 minutes, and fishing will be conducted from 8 a.m. to 3 p.m. daily.

M/V "Nautilus" Cruises 61-N-8 and 61-N-9-Salmon: Operations were continued (May 8-12, 22-26, 1961) in the Carquinez Straits to capture marked salmon fingerlings.

All trawling was conducted between 7 a.m. and 3 p.m; each tow was for 20 minutes. Tows were alternated between upstream and downstream, and between the north shore, center, and south shore of the channel. A flow meter was used to measure the amount of water strained by the net on each tow.

During the 101 tows completed, a total of 1,820 king salmon (Oncorhynchus tshawytscha) fingerlings was captured--catch per tow varied from none to 115. A total of 24 marked salmon was recovered, 22 from releases made in San Pablo Bay, approximately two miles seaward of the fishing area. One marked salmon was recovered from releases made at Coleman Hatchery and one from releases made at Rio Vista. Eighteen rainbow trout (Salmo gairdneri) were also taken--three were marked and had been released in the American River.

Other species appearing in the catch, listed in order of abundance, were: northern anchovy (Engraulis mordax), Pacific herring (Clupea pallasi), striped bass

(Roccus saxatilis), American shad (Alosa sapidissima), starry flounder (Platichthys stellatus), jack smelt (Atherinopsis californiensis), splittail (Pogonichthys macrolepedotus), staghorn sculpin (Leptocottus armatus), Sacramento smelt (Spirinchus thaleichthys) Pacific tomcod (Microgadus proximus), and carp (Cyprinus carpio).

Two tows were made at a depth of 50 to 60 feet to determine if salmon were evenly distributed in depth. Small numbers caught at these depths (1-2) compared to the larger numbers caught subsequently at the surface (13-22) indicates that better catches may be made on the surface during the hours fished. With the exception of these two deep tows, all fishing was done at the surface.

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PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 61-A-3-Pelagic Fish: The coastal waters from Ensenada, Baja California, northward to Santa Barbara, Calif., were surveyed (April 7-24, 1961) by the California Department of Fish and Game research vessel Alaska. The objectives were (1) to sample spawning sardines to determine what relationship exists between the spring spawners off southern California and northern Baja California and the genetically distinct groups which have been defined as "northern" and "southern" stocks; (2) to locate and sample fish from the transition zone between the two stocks to determine the extent of mixing; (3) to determine if a 500-watt underwater light would increase fish attraction when used in addition to the regular (1,500-watt surface) survey light; and (4) to make incidental collections requested by other investigations.

Of the 75 night-light stations occupied, anchovies were attracted at 9, Pacific mackerel at 7, jack mackerel at 6, and sardines at 4. Sardines were collected in sufficient numbers for blood genetic studies at 2 stations off Santa Catalina Island. Blood tests were completed for both samples and they consisted of the "northern" stock type.

A 500-watt underwater light was used with the 1,500-watt surface light at alternate stations. With the survace light only, fish were attracted at 8 of 35 stations. The underwater light used in conjunction with the surface lights attracted fish at 10 of 35 stations. No significant difference could be detected between the two types of lights for the small number of stations tested.

The vessel scouted 341 miles during which 114 schools of anchovies, 28 small schools of mackerel, and one school of bonito were observed. Anchovies were observed almost continuously between Pt. Hueneme and Santa Barbara, and from Pyramid Head, San Clemente Island, eastward for 20 miles. They were also abundant in Todos Santos Bay, Mexico. The pelagic red crab (Pleuroncodes planipes) occurred in large numbers at 2 night-light stations between Oceanside and La Jolla.

Live kelp bass were collected for the Department's tuna investigation. Blood from kelp bass, relatively easy to obtain, will be used to develop serological techniques.

The 4 underwater viewing ports afforded an excellent view of sardine behavior and aided in obtaining a sample of "wild" sardines.

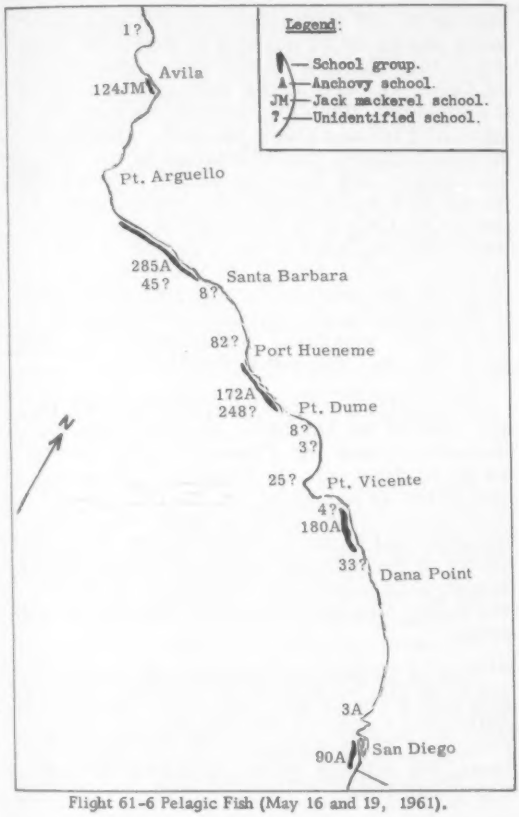
Sea surface temperatures ranged from 12.4° C. (54.3° F.) near Pitas Pt. near Santa Barbara, Calif., to 16.4° C. (61.5° F.) in Los Angeles Harbor.

Airplane Spotting Flight 61-6-Pelagic Fish: The inshore area from the United States Mexican Border to Point Piedras Blancas, Calif., was surveyed from the air (May 16 and 19, 1961) by the Department's Cessna "182" 9042T, (1) to determine the distribution and abundance of pelagic fish schools; and (2) to determine the magnitude of sportfishing activity, other than party boats, with particular emphasis on barracuda and white sea bass.

Adverse weather limited flying time to only 2 days of the 4 scheduled. Conditions were generally unfavorable on May 16, but were good on May 19.

Many more fish schools (1,311) were seen than during the April flight when only 185 schools were counted. During the May flight 730 anchovy, 124 jack mackerel, and 457 unidentified schools were observed. The jack mackerel were within a mile of shore between Pismo Beach and Avila. Four school groups of anchovies were seen.

These were off the Coronado Strand (90 schools), between Newport Beach and Seal Beach (180 schools), between Point Dume and Port Hueneme (172 schools), from Santa Barbara to Point Conception (285 schools). Three additional schools were observed off Torrey Pines. Most of the unidentified schools were deeper but in the same areas as the anchovies.



Flight 61-6 Pelagic Fish (May 16 and 19, 1961).

A moderate to severe "red tide" condition prevailed from Port Hueneme to La Jolla. It was generally confined to the extreme inshore area but at times appeared to extend several miles to sea. The most severe outbreaks were noted off Santa Monica and El Segundo, between Laguna Beach and Dana Point and in the vicinity of Oceanside.

Between the hours of 10 a.m. and 2:30 p.m. on May 16, 54 boats, excluding party boats, were observed fishing the inshore area from Pt. Dume to the Mexican Border. The largest concentration of skiffs (36) was in the Los Angeles-Long Beach Harbor area at 11:30 a.m. By 3 p.m., only 13 boats were still fishing. Six boats were seen in Santa Monica Bay, 6 between Seal Beach and Newport Beach and 6 between Newport Beach and Point Loma. It was not possible to obtain a count of the fishermen, but spot checks revealed 2 to 4 per boat, with 2 in most.

A total of 50 surf fishermen was counted in Santa Monica Bay at about 10:45 a.m. Most were along sandy beaches between Will Rogers State Beach and Playa del Rey. A few people were fishing from rocks and jetties. Some surf fishermen were noted south of Seal Beach but an accurate count was not possible. No attempt was made to count pier fishermen.

A commercial barracuda troller was seen off Pt. Fermin.

Note: Also see Commercial Fisheries Review, July 1961 p. 10.

Cans- Shipments for Fishery Products

JANUARY-APRIL 1961:

Total shipments of metal cans during January-April 1961 amounted to 37,265 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 32,874 tons in the same period a year ago. Canning of fishery products in January-April this year was confined largely to tuna, shrimp, Gulf oysters, and jack and Pacific mackerel.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

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BY AREA AND QUARTERS, 1959 AND 1960:

In 1960, out of total shipments of 123,929 short tons of steel for use in the manufacture of cans for fishery products, the Pacific Area or West (including Hawaii and Alaska) utilized 88,366 tons or 71.3 percent. The bulk of the fish-canning facilities are located in the Pacific area. The Pacific Area was followed by the Eastern Area (New England, Middle Atlantic, South Atlantic, and Puerto Rico) with 30,968 tons or 25 percent. The Central Area (including the Gulf of Mexico

Table 1 - U. S. and Puerto Rico Shipments of Steel for Cans for Fishery Products, 1959 and 1960

Area	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Total	
	1960	1959	1960	1959	1960	1959	1960	1950	1960	1959
	(Short Tons)									
West	16,090	14,223	30,540	25,300	23,776	26,775	17,960	15,511	88,366	81,809
East	5,311	4,701	6,546	7,318	11,854	10,990	7,257	6,290	30,968	29,299
Central	622	533	1,451	1,740	1,725	1,485	797	613	4,595	4,371
Total	22,023	19,457	38,537	34,358	37,355	39,250	26,014	22,414	123,929	115,479

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

States and Inland States) used only 4,595 tons or 3.7 percent.

The over-all total of 123,929 tons was up 7.3 percent from the 115,479 tons used in 1959, due primarily to an increase of 8.0 percent in the amount of steel used for cans in the Pacific Area. Also, shipments of steel for cans for both the Eastern and Central areas were up 5-6 percent in 1960.

Shipments of steel for the manufacture of cans for fishery products on a quarterly basis were heaviest during the second quarter of 1960 for the Pacific Area, but for the Eastern and Central Areas the heaviest shipments occurred in the third quarter. In the West, 34.6 percent or 30,540 tons were consumed in the second quarter of 1960. The Eastern Area used 11,854 tons (38.3 percent of the 30,968-ton total) in the third quarter. The Central Area used 37.5 percent of the 4,595-ton total for the area in the third quarter and 31.6 percent in the second quarter.

Note: Also see Commercial Fisheries Review, July 1960 p. 23.

Central Pacific Fisheries Investigations

TUNA BAIT, GEAR, AND OCEANOGRAPHIC STUDIES MADE NEAR HAWAIIAN ISLANDS: M/V "Charles H. Gilbert" Cruise 52: The primary missions of a 52-day cruise (ended May 17, 1961) by the U. S. Bureau of Commercial Fisheries' research vessel Charles H. Gilbert were to tag and release skipjack tuna outside the area of the Hawaiian live-bait fishery, determine the distribution of temperature and salinity in the surface waters, release drift bottles for studies of surface currents, collect skipjack blood samples for serological studies, and test the feasibility of gill nets for use in catching skipjack from surface schools.

Skipjack were sampled by live-bait fishing, using five different species of bait--threadfin shad, mosquito fish, tilapia, iao, and nehu. Of particular interest was hardiness shown by 70 buckets of threadfin shad from the Wahiawa Reservoir on the island of Oahu, stocked by the Bureau's Biological Laboratory, Honolulu, and the Hawaii Division of Fish and Game in 1959. Mortality during capture, transportation to the Charles H. Gilbert, and acclimatization to sea water in the bait wells aboard the vessel was 17 buckets. Only 1 or 2 buckets were lost by mortality during a 5-week period of the cruise. Unfortunately, as the skipjack schools encountered during the cruise were wild and fast and consisted primarily of small fish, a critical evaluation of the shad as a live bait was not possible.

The principal area of operation was to the west of the Hawaiian Islands, between Johnston Island and French Frigate Shoals. Of 95 surface schools observed, 26 were identified as skipjack. Of the remaining 69, 3 were yellowfin, 1 was a little tuna, 1 was dolphin, and 64 were unidentified. The majority of the schools were seen near islands. Rough seas accounted, at least in part, for the fewer number of school sightings in mid-ocean.

Out of 20 skipjack schools chummed, 435 skipjack were caught from 12 of the schools. Individual catches from the schools ranged from 1 to 115 skipjack. With but two exceptions, the schools were composed of small, 2-5 pound fish.

Skipjack (242) were tagged, all near Johnston Island. Of those tagged, 218 weighed 2 to 5 pounds and 24 weighed an average of 13 pounds. Blood samples were obtained from 100 fish from two schools near French Frigate Shoals and 42 more samples were collected from a school near Kailua, Hawaii.

The results of temperature observations (surface and bathythermograph) and surface salinity samples await detailed analyses. However, those salinity samples analyzed on board indicated that conditions were

typical for summer months in the central Pacific, with the boundary between the higher salinity North Pacific Central waters and those of intermediate salinity positioned to the north of the Hawaiian Archipelago.

About 700 drift bottles were released in waters to the leeward of the Hawaiian Islands (Oahu to Hawaii) and in various channels among the islands. By the end of May, 50 of the bottles had been recovered. Their drift was similar to that observed for the bottles recovered from the January-February 1961 cruise of the Charles H. Gilbert. The majority of the bottles dropped in leeward waters drifted northerly or easterly until they moved through the channels into windward waters, then the movement was to the west. The similarity between the drift during late winter and early summer periods is particularly striking, considering the fact that the winds were southerly (Kona) during the first period and from the northeast during the latter part of the cruise. An additional 200 bottles were released in waters within 5 miles of shore around Oahu. In general, recoveries to date (40 in number) have been only of those bottles released on the windward (eastern) side of the island.

Several experiments were made to test the feasibility of catching skipjack by means of gill nets. In the first test, a monofilament net (600 feet long by 24 feet deep) was set in an area where skipjack were seen breaking the surface. After a 3-hour period, the net was retrieved. No skipjack were caught. During the second test, both monofilament and nylon nets were used and chumming with live bait was carried out during and after the net was set. Thirty-four skipjack were caught in the monofilament section, none in the nylon. Direct observations from the underwater chambers of the vessel revealed that the nylon net was visible at a distance of 20-30 feet from the vessel, while the monofilament was nearly invisible. The skipjack, although feeding on the bait, were observed to avoid the nylon net.

In the third experiment, the skipjack school was chummed to the stern of the vessel and an attempt was made to encircle the school with the net. Unfortunately, the leading edge of the net became entangled in the screw and the experiment was discontinued. However, upon hauling the net, 60 skipjack were taken from the monofilament section, 3 from the nylon.

In the final test, a skipjack school was fished by the pole-and-line method. After capture of five live specimens for use in the Kewalo experimental tanks, the gill net was set with the vessel moving forward at chumming speed (2 knots). After setting the net, live bait was used to keep the school in the vicinity of the net. A total of 225 skipjack were caught in the monofilament section, 2 in the nylon. Although chumming was concentrated near the middle section of the monofilament net, skipjack were found gilled throughout the 100-fathom length of the monofilament webbing.

Express Rates

FISHERY PRODUCTS COMMODITY RATES INCREASES SUSPENDED:

A new tariff has been filed to become effective June 27, 1961, publishing a uniform scale or rates on all fish and seafoods moving via express. These new rates are based upon 60 percent of First Class Express Rates.

At the same time, the express agency cancelled all commodity rates on fish and seafoods. Many of these rates were applicable on various volume weights and were based upon levels ranging from 30 to 50 percent of First Class Rates. For example, as of mid-June the rates from Green Bay, Wis., to New York, N. Y., were $6.45 up to 1,000 pounds, $4.64 on shipments of 1,000 to 2,000 pounds, and $4.29 over 2,000 pounds. The new rate would be $8.92 per 100 pounds, regardless of volume. The express agency took this action due to alleged increased costs in handling this traffic.

The Interstate Commerce Commission just before the effective date refused to allow the express agency to cancel all commodity rates on fish and shellfish. The suspension order is only for seven months (to January 26, 1962) after which time the increases may go into effect if the ICC has not ruled on the lawfulness of the rates. The Commission ordered an investigation of the lawfulness of the proposed rates, charges, and regulations. The fishing industry is expected to protest the increases at the hearings which are expected to be scheduled.

The tariffs involved are Railway Express Agency, Incorporated: I.C.C. 8512 in full; Supplement 7 to I.C.C. 8320; Supplement 10 to I.C.C. 8321; Supplement 12 to I.C.C. 8326; Supplement 6 to I.C.C. 8331; also in Supplement 1 to I.C.C. 8494, the cancellation notice insofar as it directs the cancellation of matter held in force by reason of this suspension.

Federal Aid to Commercial Fishery States Endorsed by Interior Department

A proposal of Federal aid to states with commercial fisheries was endorsed on June 15, 1961, by the U. S. Department of the Interior. In a letter to Chairman Warren G. Magnuson of the Senate Committee on Interstate and Foreign Commerce, Assistant Secretary John A. Carver, Jr., endorsed the objective of Senate Bill 1230 but recommended several amendments. Most of these amendments would establish a policy of state matching funds, somewhat on the order of the existing Federal aid to states for sport fish restoration.

Under the Department's proposal, an amount equal to 30 percent of the customs duties on fishery products ($4 to $6 million) would be available as grants to colleges or research institutions and as Federal aid to states having commercial fisheries. The Department of the Interior would distribute one-third of this amount to educational and research institutions for fishery studies and for training personnel. The Department would distribute the remaining two-thirds to states with commercial fisheries.

The Department's report declared that many serious problems face the commercial fishing industry and recommends that the Government give aid to states in meeting these problems either under the fiscal procedures set forth in the bill or by direct appropriations.

The report stated that "in addition to Federal research, there is need to encourage and strengthen state fishery research, rehabilitation, and development programs, as set forth in this bill, in those states where our domestic fishing industry is active. State activities of this kind complement the fishery activities this Department is carrying forward. Certain phases of fishery research and rehabilitation are most susceptible of state management. Adequate programs of state and Federal research will be mutually beneficial in promoting the Nation's commercial fisheries."

This proposal would not affect the present Saltonstall-Kennedy program for the betterment of the domestic fishing industry which is also financed by annual amounts equal to 30 percent of the customs duties on fishery products.

Federal Aid Funds for Sport Fish and Wildlife Restoration

A preliminary apportionment of $12,850,000 of Federal Aid funds will be made available July 1, 1961, for State fish and wildlife projects, Secretary of the Interior Udall announced May 29, 1961. The balance of Federal Aid fish and wildlife restoration program funds for the year ending June 30, 1962, will be apportioned in October 1961. The comparable preliminary apportionment for the fiscal year beginning July 1, 1960, was $12,800,000.

The Secretary stated that the early apportionment was made to help States program their Federal Aid activities more advantageously. It has been of special importance to those States operating on a revolving fund basis.

Under the Federal fish and wildlife restoration programs, States spend their own funds on approved projects and are then reimbursed up to 75 percent of the cost. Many States have exhausted or will have exhausted their Federal Aid funds for programming projects to start during the next fiscal year. The partial apportionment makes it possible for these States to secure approval for projects to start on July 1, 1961, or soon thereafter and to claim reimbursement therefor. Otherwise, many States would have to hold up projects until the regular apportionment in the autumn.

Federal Aid funds are derived from an excise tax on sporting arms and ammunition

and on sporting rods, reels, creels, and artificial lures. Distribution of the two funds is made on formulas based upon the number of paid license holders in a State and on its area, as prescribed by law. Both Federal Aid Acts (Pitman-Robertson Act, approved September 2, 1937, and the Dingell-Johnson Act, approved August 9, 1950) are administered by the Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service.

Of the $12,850,000, a total of $9,850,000 is for the restoration of wildlife and $3,000,000 for the restoration of fish. No indication was given relative to the possible total apportionment, but in the last five years wildlife restoration funds have amounted to between $14-$15.5 million and fish restoration funds have been approximately $5 million. For the fiscal year ending June 30, 1960, fish restoration funds amounted to $5,836,000.

Note: Also see Commercial Fisheries Review, August 1960 p. 21 and January 1960 p. 34.

Florida

FISHERIES RESEARCH, JANUARY-MARCH 1961:

The Marine Laboratory of the University of Miami is carrying on research on fisheries with funds provided by various sources, including the Florida State Board of Conservation and the U. S. Fish and Wildlife Service. The research of interest to commercial fisheries which appeared in the Laboratory's March 1961 Salt Water Fisheries Newsletter follows:

Larval Shrimp: The famed Tortugas pink shrimp (Penaeus duorarum) has been under study by Marine Laboratory scientists since soon after the discovery of the resource in 1950. A new development in this study is the use of a plankton sled net recently brought from Norway. The plankton sled net is a deep sea net which slides over the bottom of the ocean. Because it can be towed in close proximity to the sea bottom, it can collect organisms rarely taken by conventional plankton nets.

The plankton sled was used in Florida to sample water very near the bottom on the Tortugas shrimp fishing grounds as part of a study sponsored by the U. S. Fish and Wildlife Service. Large numbers of shrimp nauplii were collected. Nauplii are the first larval stage to develop from the egg. Also eggs of the right size and form to be shrimp eggs were found in great numbers. Further use of the sled, it is hoped, will shed light on the distribution of eggs and early nauplial stages of pink shrimp.

Spotted Sea Trout: An experiment designed to estimate the total number and mortality rate of spotted sea trout in the Pine Island, Fla., population is being conducted. Of 5,407 spotted sea trout tagged in January 1961, a total of 930 have been returned. The rate of return of 17 percent is indicative of the high rate of mortality that this population is subject to from fishing.

All fish were tagged with internal anchor tags. This type of tag consists of a 1.4 by 0.3 inch green plastic tag to which is attached a yellow plastic streamer. The streamer protudes from the fish's body to aid detection. Fishermen are urged to cooperate by taking the tag to their local fish house with catch information.

Nonutilized Species Incidental to Shrimp Fishing: The investigation of the utilization of nonutilized fish from the shrimp fishery is being investigated with emphasis on the development of methods for preparing useful products.

The key to the process is an enzymatic breakdown of the fish. Enzymes are chemicals produced by the body, which break down the complex proteins that constitute the body of the fish, into less complicated materials and convert them to a liquid in a short time. The action of enzymes is not completely unfamiliar to us, in fact we are surrounded by their activity, they are the architects and demolition crews that build up and destroy all biological materials. The life process itself is intimately related to enzymatic activity.

Although enzymes are almost insignificant in size, their activity is in every respect formidable. When protein digesting enzymes act on the fish, they convert it to a liquid in a matter of 1 or 2 days when the temperature is 98° to 100° F., or in 5 to 6 days at lower temperature of 75° F. To do the same work a chemist would have to add a concentrated acid, heat the material at 570° F., under a pressure of 50 pounds per square inch, and hold it for three hours.

The enzymatic digestion of the fish gives a product called "liquid fish," which contains all the basic constituents of the original fish, only in a liquid or slurry form. We have received various suggestions for applications, and are considering a few at the present time.

In the fertilizer field, liquid plant nutrients are easier to apply, to transport, and to handle than solid nutrients. Nitrogen, one of the important plant nutrients is present in good quantity in liquid fish, furthermore it comes in an organic form which is absorbed slowly by the plant. We see an important use for liquid fish as a base or matrix for the manufacture of special tailor-made fertilizer formulas, in which plant nutrients would be added to the existing organic substances.

During the process of enzymatic digestion, a clear liquid floats to the top. This is a concentrate of soluble fish proteins, much like the beef proteins of bullion cubes. This liquid has a bland odor and flavor and constitutes a good source of readily digestable protein material. We hope that the pet food manufacturers will look to this material as a possible ingredient for their products.

Fish Behavior Studies: The apparatus for determining whether sharks can detect, and orient to, low-frequency vibrations has been constructed at considerable expense and is now being used. Very little is known, of a scientific nature, about these large predators and it is felt that a more thorough knowledge of their sensory systems might provide a better understanding of the "shark problem." This project is sponsored by the Office of Naval Research.

A Japanese scientist is now working at the Marine Laboratory on the eyes of pelagic fishes, under a contract with the National Science Foundation. We hope to be able to determine the axis of vision and range of accommodation in sailfishes, dolphin, tuna, etc. These animals have escaped intensive investigation of their sensory systems because of the difficulty of maintaining them in captivity. We hope to uncover leads for further research with their visual apparatus and eventually to discover the importance of vision in their lives.

Frozen Foods

VOLUNTARY HANDLING PRACTICES APPROVED:

A joint five-year program with the major objective of further advancing handling standards in the frozen foods industry and thereby speeding the growth of the broadest possible customer acceptance was announced early in June 1961 by the Frozen Foods All-Industry Coordinating Committee. Major facets of the program include immediate promulgation of voluntary operating practices throughout the industry, progressively tightened throughout the next five years, indoctrination of employees at all levels to understand the importance and proper techniques of maintaining product quality, and encouragement of the development and use of better and more efficient equipment.

In announcing the program, the Committee Chairman, said: "We believe that never before have so many diversified interests in so large and complex an industry joined forces to lift a young industry by its bootstraps, so to speak. Although current sales are at the $3 billion a year level it is estimated that perhaps half of the nation has never even tasted frozen foods, at least knowingly. . . ."

Cooperating Associations and Organizations: The Voluntary Operating Practices to be promulgated throughout the industry have been painstakingly worked out in great detail through many conferences in the past year and are now approved and signed officially by the following organizations: American Trucking Associations, National Associations of Food Chains, National Association of Frozen Food Packers, National Association of Retail Grocers of the United States, National Association of Refrigerated Warehouses, National Frozen Food Association, National Fisheries Institute, and National Prepared Frozen Food Processor Association.

Cooperating with the Committee are the following organizations: American Meat Institute, Institute of American Poultry Industries, National Food Brokers Association, National Institute of Locker and Freezer Provisioners, and Super Market Institute. Each has volunteered fullest support to the very large job of indoctrinating employees and supervisors throughout so far-flung an industry. Other national, regional, and local associations have also been invited to enlist in the various educational projects and have responded most cooperatively.

Invaluable cooperation in scientific and research aspects of the program have been provided and further promised to the Committee by the Western Regional Research Laboratory of the U. S. Department of Agriculture, the Refrigeration Research Foundation, and other public and private research organizations. The U. S. Bureau of Commercial Fisheries will undertake Time-Temperature-Tolerance studies on fishery products as soon as funds are made available to the Bureau's Gloucester Technological Laboratory.

Problem of Educating Handlers: The employee indoctrination program will take the longest period to complete because of the numbers involved. Preliminary educational seminars for wholesalers and retailers have already been held in Massachusetts by the University of Massachusetts and in North Carolina by North Carolina State College. The Refrigeration Research Foundation is conducting a series of seminars for refrigerated warehouse supervisors in different areas across the nation. The release of two educational motion pictures during 1961 is planned: "Operation Zero" for all types of trucking employees and allies, produced by the American Trucking Associations, and "Frozen Foods Have a Memory" for retail grocery personnel in particular but with wider applications, produced through the cooperation of the U. S. Department of Agriculture. Booklets on the proper handling of frozen foods have been prepared by many associations. Federal and State Extension Services have also generously offered their cooperation in the industry's program.

The Committee has been in touch with various inventive approaches to improving equipment by suppliers outside as well

as within the industry. It is generally believed that the industry's well-publicized program will itself prove a major stimulus to further research looking toward more efficient storage, trucking, display cabinets, and other handling equipment.

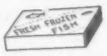
Over-all Handling Practices Spelled Out for the First Time: "The basic initial task of the Frozen Foods All Industry Coordinating Committee has been largely completed," stated the Chairman, "and I can find no words adequate to pay tribute to the hard-working committee members who made it possible. Indeed, it may be considered somewhat of a miracle that the sponsoring associations, with their diversity of memberships and purposes, could be guided to a common course of action. This has probably never happened before in the food industry."

The Voluntary Operating Practices for the industry, approved by the sponsoring associations, have been submitted to the members of industry for their guidance. It is up to the associations, their members, and their many allies to implement the practices. The Committee will remain in active existence and its members will pursue several educational projects.

It was pointed out that the practices are, in essence, a timetable to a decidedly higher level by 1965. They are realistic in that they take into account the fact that a very heavy investment in equipment now in use was made before much of the newer and better equipment became available. They also were written with the knowledge that many of the workers who handle frozen foods have been only partially trained and supervised in this young, fast-growing industry and that time will be needed to correct these conditions. For that reason, during the remainder of this year and through next year, the Practices permit limited and realistic deviations above zero for limited periods at certain stages of handling. During 1963 and 1964, when more good equipment will be in use and the employees will be better trained, these tolerances will be tightened. In 1965 a further tightening will take place. Beginning then, the practices call for handling frozen foods at zero or lower all the way, except for slight deviations and limited time, when the product is in transit or changing locations.

The tolerances for 1961 through 1964 have been set to provide feasible stages for upgrading the methods of those of the industry's members who are faced with the greatest natural difficulties and the greatest proportionate new investment. It is expected that most industry members will better these operating practices from the start and will arrive at the improvement goal before 1965. It would be a serious mistake, on the other hand, if too rapid a program brought about such junking of still-valuable equipment and consequent business failures as substantially to raise the price to the consumer of frozen foods.

It is the intention of the members of the Committee to meet again before the end of 1961 and determine whether these initial Voluntary Operating Practices have been properly interpreted and found adequate to achieve the desired objectives and whether modifications or revisions, leading to an even more rapid rate of improvement, are feasible and should be incorporated.



Great Lakes Fishery Investigations

WESTERN LAKE SUPERIOR FISHERY SURVEY FOR 1961 SEASON BEGINS:

M/V "Siscowet" Cruise 1: The 1961 season operations of the U. S. Bureau of Commercial Fisheries research vessel Siscowet were begun May 16-31, 1961, in the western area of Lake Superior.

Studies were devoted to the collection of larval stages of fish, the bathymetric distribution of chubs, and a survey of native and planted lake trout in the Apostle Islands region. The work took place in the following areas: south of Stockton Island; west of Outer Island; north of Ironwood Island; Raspberry Bay; Frog Bay; Red Cliff Point; west Madeline Island; and Pike's Bay.

A 5-foot net constructed of 1/16-inch mesh nylon was towed at depths ranging from 8 to 80 feet below the surface. Eight 15-minute tows captured 38 fish larvae. They did not appear to be concentrated at any particular level--catches were about the same at all depths. Many of the larvae appeared different but positive identification could not be made in the field.

A standard gang of experimental gill nets (1- to 5-inch mesh by $\frac{1}{2}$-inch intervals) set at 62 fathoms south of Stockton Island took 263 chubs. Most all of the chubs had spawned late last fall or during the winter.

In cooperation with the Wisconsin Conservation Department, arrangements were made for 23,500 lake trout to be planted from shore in Frog Bay. These fish represented three stocks: 11,700 were of the Marquette domestic stock reared at Pendills Creek Rearing Station, Mich.; 5,900 were of the Green Lake, Wis., stock and 5,900 of the Apostle Island stock--both hatched and raised in the Bayfield Hatchery.

The Siscowet made trawl tows during and after planting of the trout to determine the time required for shore-planted lake trout to find suitable habitat and begin natural feeding.

The first lake trout were taken at a depth of 5 fathoms about 40 minutes after planting. They reached 10 fathoms in 1 hour, 50 minutes, and 15 fathoms in $3\frac{1}{2}$ hours after planting. The depth of 15 fathoms is about 1 mile from the planting site. It is considered suitable lake trout habitat because both native and formerly planted trout were captured in that area. Stomachs from all the recently planted trout were examined. It was not until 48 hours after planting that active feeding (Pontoporeia, insect larva) took place. All three stocks were proportionately represented in the trawl catches.

Trawl tows made in other areas among the Apostle Islands revealed a high percentage (nearly 80 percent) of hatchery-reared trout from previous years' plantings. The

1960 Bayfield-stocked fish were predominant in the catches.

Surface water temperatures ranged from 37.9° F. south of Stockton Island to 48.2° F. in Frog Bay.

M/V "Siscowet" Cruise 2: Spring environmental conditions were studied (June 1-9, 1961) at three limnological stations. Collections of limnological data and materials included: records of water temperatures, water samples for chemical analyses, bottom and plankton samples, and Secchi-disc readings. Information was gathered also on the bathymetric distribution of fish stocks, the distribution and survival of planted lake trout, the larval stages of fish, and experimental midwater trawling.

Areas visited during cruise 2 were: Frog Bay; south of Stockton Island; Pike's Bay; south of Oak Island; north of Sand Island; west of Bear Island; Sand Bay; west Madeline Island; north of Madeline Island; and north of Eagle Island.

Trawl catches made in Frog Bay and west of Bear Island and catches in gill nets set in Sand Bay included lake trout which had been planted from shore this spring. Bear Island is about 10 miles from the nearest planting site. One 15-minute trawl tow west of Madeline Island (17 fathoms) took 14 small trout, all of them fin-clipped. Ten of these trout bore the left-front fin clip which was the mark used by the Wisconsin Conservation Department for the 1960 plant. The success of the 1960 shore plant was further demonstrated in trawl catches from other areas. Excepting trout of the 1961 plant, the Siscowet captured 48 small trout during cruises 1 and 2. Thirty-nine were fin-clipped (81 percent) and of these, 30 were from the 1960 Bayfield plant. Other species common in the trawl catches were smelt, whitefish, cottids, sticklebacks, and trout-perch.

A gang of experimental gill nets set at 83 fathoms north of Sand Island took only a few deep-water chubs (C. kiyi) and several deep-water sculpin which were nearly ready to spawn.

A 43-foot semi-balloon trawl was converted to a full-balloon type and equipped with small hydroplane floats--in addition to the otter doors--for midwater trawling. Catches were generally small but one catch of 121 smelt 50 feet below the surface in 22 fathoms is evidence that this type of gear may be useful in sampling pelagic fish during certain stages of their life history. Plans include further experimentation with this gear.

Surface-water temperatures varied from 37.6° F. north of Sand Island to 50.7° F. in Sand Bay. The water temperature on the bottom was about 40° F.

Note: Also see Commercial Fisheries Review, June 1961 p. 24.

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LAKE MICHIGAN 1961
FISH POPULATION SURVEY:

M/V "Cisco" Cruise 1: The primary objective of the U. S. Bureau of Commercial Fisheries research vessel Cisco during the 1961 season will be to inventory the chub populations of northern Lake Michigan so that there will be a basis for future comparisons. The same program was carried out in 1960 in the southern part of the lake. Gangs of nylon gill nets consisting of 9 mesh sizes totaling about one-half mile in length, and 50-foot balloon trawls of a type used by several of the Lake Michigan commercial trawlers will be fished this year. Gears of the same specifications were used in 1960.

Most of the effort during the first cruise (May 16-30, 1961) was devoted to gill-net fishing. Overnight sets were made at 25 and 50 fathoms off Charlevoix and Manistique, Mich., and Sturgeon Bay, Wis., and at 80 and 135 fathoms off Frankfort, Mich. Chub catches were light and predominately Leucichthys hoyi, except at 80 and 135 fathoms off Frankfort where the very few chubs taken were L. kiyi. No L. alpenae or L. zenithicus were caught in any of the lifts, but small numbers of L. reighardi, which appeared to be at the height of their spawning season, were taken in several of the sets. A few L. reighardi eggs were collected for taxonomic studies at the Northville, Mich., hatchery. Other species in the gill nets included a few lake herring, smelt, deep-water sculpins, trout-perch, and alewives; one individual of the latter species was caught at 135 fathoms.

Trawl hauls were made at 15, 25, and 50 fathoms off Manistique, 30 and 50 fathoms off Sturgeon Bay, and 30 fathoms in Little Traverse Bay east of Charlevoix. Chub

catches, on the basis of pounds per hour, ranged from none at 15 fathoms off Manistique to 900 at 30 fathoms off Sturgeon Bay. A 30-minute tow at 15 fathoms off Manistique yielded a pure catch of 800 pounds of alewives. Also, great numbers of small alewives were seen escaping through the cod end as the net was being brought in. In addition to chubs and alewives, the trawls took small numbers of trout-perch (as deep as 30 fathoms), smelt, slimy sculpins, and deep-water sculpins (50-fathom tows only).

Hydrographic collections and observations were made at 40-fathom stations off Charlevoix, Manistique, Sturgeon Bay, Frankfort, and midlake between Charlevoix and Manistique, and at 144 fathoms off Frankfort. Surface water temperatures were extremely cold throughout the cruise; open-lake temperatures were mostly 3° to 4° C. (average about 38° F.), and the lowest recorded was 2.5° C. (36.5° F.). Near shore, where there was very slight thermal stratification, surface temperatures ranged up to 7° C. (44.6° F.). The winter-like thermal condition of the northern portion of the lake accounts for the catches of alewives in very deep water and trout-perch in relatively deep water. When pronounced thermal stratification sets in, these species will move into the warm water near shore. Unusually clear water was observed at the 144-fathom station, where a Secchi disc reading of 60 feet was recorded. Disc readings at other stations ranged from 18 to 27 feet.

M/V "Cisco" Cruise 2: Most of the effort during Cruise 2 was devoted to trawling. Extensive areas of rough and steeply sloping bottom in the north end of Lake Michigan make it much more difficult to locate good trawling bottom than in the southern portion, especially when it is desired to maintain a given depth throughout the tow. Half-hour tows were made at 6, 15, 25, 35, and 50 fathoms off Frankfort, Mich.; at 30 fathoms off Charlevoix, Mich.; at 15, 25, 35, and 50 fathoms off Manistique, Mich.; at 30 and 50 fathoms off Sturgeon Bay, Wis.; and at 12, 15, and 25 fathoms off Kewaunee, Wis. Chub catches were small and in most cases were made up entirely of bloaters.

Alewives were the commonest species in the trawl catches besides chubs. At least a few were taken in nearly every tow, but catches were larger in the tows at 25 fathoms and shallower. The largest catch of alewives was 80 pounds, at 15 fathoms off Frankfort. It is certain that in some cases great numbers of small individuals of this species escaped through the 1-5/8-inch mesh of the cod end.

Also taken in the trawl were few smelt (mostly in shallower tows; largest catch was 43 pounds at 15 fathoms off Manistique); few deep-water sculpins (up to 25 pounds in the 50-fathom tows); slimy sculpins (very few except for a modest catch at 50 fathoms off Manistique); and lake herring (uncommon).

Preliminary experimentation with a 40-foot modified British Columbia midwater trawl was conducted off Charlevoix. The trawl appeared to function well, but there were no concentrations of fish to test its fish-catching ability.

Standard gangs of nylon gill nets (50 feet each of $1\frac{1}{4}$ and $1\frac{1}{2}$, and 300 feet each of 2, $2\frac{3}{8}$, $2\frac{1}{2}$, $2\frac{3}{4}$, 3, $3\frac{1}{2}$, 4-inch mesh) were set at 25, 50, and 80 fathoms off Frankfort. Chub (Leucichthys sp.) catches were very light. The L. reighardi appeared to have just completed their spawning season.

Hydrographic collections and observations were made at 40-fathom stations off Frankfort, Charlevoix, Manistique, Sturgeon Bay, and in midlake between Charlevoix and Manistique; and at a 144-fathom station between Frankfort and Sturgeon Bay. Surface water was warming slowly and beginning to stratify, but the warming had been very slight in midlake between Frankfort and Sturgeon Bay. Surface temperatures ranged from 3.9° to 13.2° C. (39.0° to 55.7° F.). Secchi disc readings were 13 to 19 feet, except at the 144-fathom station, where the reading was 45 feet.

Note: Also see Commercial Fisheries Review, July 1961 p. 21

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LAKE ERIE FISH POPULATION SURVEY CONTINUED:

M/V "Musky" May 1961: Although the success of the U. S. Bureau of Commercial Fisheries research vessel Musky operations on Lake Erie is not dependent nor to any degree measured by the quantity of fish taken, its trawl catches during May were probably the most productive on record. Literally, thousands of fish were caught and sampled. Yellow perch of the 1959-year-class were dominant in the catch. Other species taken in considerable numbers were spottail shiners and sheepshead.

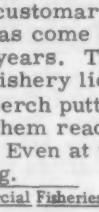
Of exceptional note was the trip to East Harbor during the first week of operations. Parallel 10-minute tows at the 15-foot and 20-foot depths produced rather uniform catches totaling several hundred fish of assorted sizes and kinds. At the 10-foot depth, the catch was of such magnitude that it necessitated sub-sampling procedures to record the essential data. The cod end of the net was so packed with fish that many more could not have been taken regardless of time limit. A final tally placed the trawl catch at more than 1,500 pounds and 11,000 fish. Approximately 98 percent of the lift consisted of male two-year-old perch. A second inshore tow provided almost identical results. While yellow perch are known for their segregation by sex prior to spawning, the percentage and numbers observed in so limited an area during the height of the spawning period was most unusual.

During two weeks of May the three-day-night sampling and observation series were carried out at East Harbor and Bono. High winds interrupted operations at East Harbor while bottom topography was a problem at Bono. Nevertheless, both series were completed without undue delay. Conspicuous by their absence were yearling smelt, alewives, and gizzard shad, which were among the few species that produced a good hatch in 1960.

Other trawl stations occupied were at Sandusky Bay, Sand Point, East Kelleys, and Rattlesnake. Various half-meter net tows collected numerous fry which were preserved for identification at a later date. Water temperatures in the western end of the lake which averaged 46° F. at the beginning of the month rose to about 65° F. by the end of May. This temperature range is somewhat cooler in comparison to averages of a year ago. The difference is presently evidenced by the lag in spawning and other seasonal activity for some species. Limnological information was gathered by the vessel and crew for several days on each of two different occasions. Bottom samples were taken at established stations in the western sector which were previously visited early in the 1930's and more recently by the Cisco (1958). Approximately 25 stations were covered with three samples being collected at each location.

Pessimism on the part of the commercial producers is quite apparent. Landings have dwindled to the extent that many fishermen are removing their nets from the lake. While this practice is customary during the summer season, it has come about much earlier than in the past years. The only immediate prospect of the fishery lies in the 1959-year-class of yellow perch putting on sufficient growth to make them readily available for the fall fishery. Even at that, the outlook is not too promising.

Note: Also see Commercial Fisheries Review, July 1961 p. 19.



Maine Sardines

CANNED STOCKS, JUNE 1, 1961:

Distributors' stocks of Maine sardines totaled 215,000 actual cases on June 1, 1961--18,000 cases more than the 197,000 cases on hand June 1, 1960. Stocks held by distributors on April 1, 1961, amounted to 267,000 cases, and on January 1, 1961, totaled 233,000 cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on June 1, 1961, totaled 294,000 standard cases (100 3¾-oz. cans), an increase of 59,000 cases (25.0 percent) as compared with June 1, 1960. Stocks held by canners on April 1, 1961, totaled 506,000 cases and on January 1, 1961, amounted to 1,029,000 cases.

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, June 1, 1961, With Comparisons 1/

Type	Unit	1960/61 Season				1959/60 Season				
		6/1/61	4/1/61	1/1/61	11/1/60	7/1/60	6/1/60	4/1/60	1/1/60	11/1/59
Distributors	1,000 actual cases	215	267	233	277	172	197	252	235	296
Canners	1,000 std. cases 2/	294	506	1,029	1,258	359	235	397	843	1,001

1/Table represents marketing season from November 1-October 31.
2/100 3¾-oz. cans equal one standard case.

The 1961 packing season opened on April 15, 1961, but because fish have been scarce the pack by the end of June was light--only 55,000 cases as compared to 337,000 cases in the same period in 1960. This was the smallest June pack since 1951. When the new packing season began on April 15, 1961, the carryover stocks totaled 457,000 cases

as compared to 335,000 cases when the 1960 season opened.

Note: Also see Commercial Fisheries Review, June 1961 p. 28.

* * * * *

INCREASED COSTS AND LACK OF FISH WORRY CANNERS:

Drastically increased production costs and the latest run of fish in ten years are two major problems that are of serious concern to the Maine sardine industry. As of early June 1961 the supply of fish was virtually nonexistent along the entire Maine coast, whereas normally a sizable pack would have been made by June. Only two plants, one in Belfast and another in Port Clyde, had operated by early June and the amount of fish processed was so small that it served only as a shakedown run for the equipment.

However, it is the cost factor and not the fish supply that has caused the greatest number of headaches. The lack of fish was attributed to the late, cold spring and plenty of fish were expected, especially in the Portland area, by mid-June.

Apparently there is nothing that can change the production cost outlook. A cost accounting firm, employed by the industry, has advised the canners that they can expect to have an increase of from 40 to 50 cents a case to pack the standard keyless product this season and more on the key-opening and special items.

Contributing to this situation are advances in oil, cans and covers, packing cases, and general operating expenses as well as new minimum wage legislation which becomes effective in September.

Percentage-wise this is the greatest increase of any single year in the history of the industry.

The Maine Sardine Council's Executive Secretary said on June 8 that the canners would be forced to raise prices in order to stay in business and that this would be reflected on the rapidly diminishing inventories from last year's pack.

Last year the industry produced 1,997,600 standard cases of all types of canned sardines and it expects to pack about the same amount this year if the fish finally show up.

Michigan

CHANGES PROPOSED IN GREAT LAKES COMMERCIAL FISHING REGULATIONS:

Public hearings were scheduled for late June and early July 1961 on changes in commercial fishing regulations tentatively approved early in June by the Michigan Conservation Commission.

Among the changes discussed at the meetings were measures aimed at giving immature whitefish and/or lake trout greater protection to aid the recovery of these once-abundant species in the Great Lakes. These proposals call for: (1) Raising the minimum legal size of whitefish from 17 to 18 inches, or two pounds in the round; (2) permitting use of pound and trap nets for taking whitefish and lake trout in any depth of water, provided the mesh size is increased to $5\frac{1}{4}$ inches to allow more undersized fish to escape; and (3) increasing the minimum size of mesh in gill, pound, and trap nets from $4\frac{1}{2}$ to $5\frac{1}{4}$ inches for taking whitefish and lake trout in all of Michigan's Great Lakes waters, and limiting gill nets to $20\frac{1}{2}$ meshes in depth.

The third change would not become effective until January 1, 1965. Since most nets normally need to be replaced in 3 to 4 years, this would allow commercial fishermen to plan ahead and save them from unexpected changeover costs in equipment which might be difficult to absorb if the change took immediate effect. The same reason holds true for another change proposed to take effect in 1965 which would reduce the size of mesh in gill nets from 8 to 7½ inches for taking carp in Wildfowl Bay, off Saginaw Bay.

It was proposed that the closed season on pickerel (northern pike) in Saginaw Bay be changed to match the March 5-April 10 off-limits period on yellow pike (walleye) fishing in those waters.

Completing the list of proposals was a change which would enable Michigan's Department of Conservation director to issue permits for trawling smelt and alewife in L'Anse Bay off Keweenaw Bay in Lake Superior where there is an abundance of smelt.

Mississippi

SURVEY OF OYSTER BOTTOMS:

A survey of the productive and potentially productive oyster bottoms of all state waters in Mississippi Sound and bays was completed early in 1961 by a staff member of the Mississippi Gulf Coast Laboratory at Ocean Springs, Miss. Conducted in connection with his work with the Mississippi Marine Conservation Commission, the survey was done to ascertain the condition of the existing reefs and bottoms so that future plans for rehabilitating and enlarging oyster-growing areas could be undertaken.

A barge loaded with shell to be "planted" in order to improve public oyster-growing areas in Mississippi.

During the month of April, the replanting of 2,500 barrels of seed oysters in the Sound was supervised by the Laboratory. The seed oysters were removed from overcrowded areas and replanted on established oyster beds where oysters were sparse.

Another phase of the oyster bottom improvement program was the dragging of the once productive outside oyster reefs with oyster dredges; this was done with the idea that the shells would be turned over and the clean, unfouled surfaces would be exposed just prior to the spawning and setting period.

North Atlantic Fisheries Exploration and Gear Research

MIDWATER TRAWLING FOR ATLANTIC HERRING PROMISING:

M/V "Delaware" Cruise 61-8: Promising midwater trawl catches of Atlantic herring and other fishes were made during the May 24-June 7, 1961 cruise of the U. S. Bureau of Commercial Fisheries research vessel Delaware.

Fig. 1 - Midwater trawl catch of about 4,500 pounds of herring on the deck of M/V Delaware.

Utilizing a technique developed in West Germany, a midwater trawl net was operated successfully in Gulf of Maine waters. Control of the depth of the net over the bottom was effected through the use of a depth-sounder transducer mounted on the headrope of the trawl net. A constant indication of the net opening, its relation to the bottom and the presence or absence of fish schools, was transmitted to the vessel through a two-conductor cable. This information was then recorded on board the vessel using the modified depth sounder (see fig. 1). Rapid changes in the depth of the net were brought about by increasing or decreasing the speed of the Delaware's main engine.

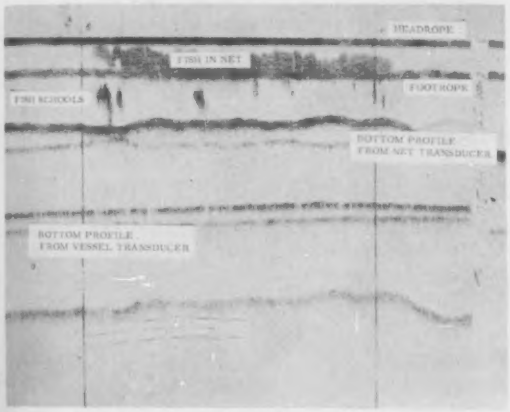


Fig. 2 - Echo-sounder recording of net over bottom as seen in the pilothouse of M/V Delaware. A constant indication is given of the net's position in relation to the bottom, the presence of fish schools, and the net opening (in this case about 40 feet between headrope and footrope).

The cruise was divided into two parts: The first phase, conducted off Gloucester, Mass., was for the purpose of testing the recently acquired electronic apparatus and the fishing gear. After some modifications to various components, the second phase was carried out. This portion of the cruise included experiments with controlling the gear's depth in relation to the bottom and experimental fishing.

During a 4-day period, 13 midwater trawl tows were made during daylight hours along the northern edge of Georges Bank. The duration of individual tows varied from 30 minutes to over two hours. The best catch per single tow included approximately 4,500 pounds of herring (Clupea harengus harengus). This catch was made in about 35 fathoms of water along the northern edge of Georges Bank with the trawl fishing 6 to 10 fathoms above the bottom. Other species represented in the catch were Atlantic mackerel (Scomber scombus), silver hake (Merluccius bilinearis), and squid (Loligo sp.).

Note: Also see Commercial Fisheries Review, June 1961 p. 34; April 1961 p. 26.

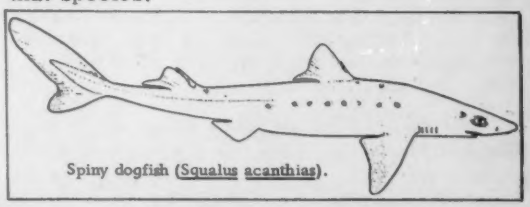
North Atlantic Fisheries Investigations

GROUNDFISH DISTRIBUTION AND ABUNDANCE ON INSHORE FISHING GROUNDS STUDIED:

M/V "Delaware" Cruise 61-7 (June 11-15, 1961): Haddock were caught in Ipswich Bay, on Stellwagen Bank, and off Nauset Beach by the U. S. Bureau of Commercial Fisheries research vessel Delaware. The vessel was on a 5-day survey to investigate the distribution and abundance of groundfish on the inshore fishing grounds off New England. The area off Race Point at the tip of Cape Cod was found to have the largest concentration of small haddock. Twenty other species of fish were caught in varying quantities.

Several species of live fish were returned to the Woods Hole Laboratory for display in the aquarium which was scheduled for opening to the public on July 1, 1961.

Spiny Dogfish Tagged Off New England Coast: In addition to the survey on distribution and abundance of groundfish conducted on this cruise, a total of 276 spiny dogfish were tagged and released, as part of a study to determine the movements and growth of that species.



Spiny dogfish (Squalus acanthias).

Two kinds of tags were used. Half the number of fish were marked with yellow plastic discs attached through the snout with stainless steel pins, while the other half were marked with yellow plastic tubing attached through the base of the first dorsal fin. A reward of $1.00 will be paid for each tag turned in, and an additional dollar will be paid if the fish is turned in

with the tag intact so that measurements can be made. A letter with information on the tagging will also be sent to the finder.

The recent dogfish tagging experiment is part of a general fisheries research program to determine the migrations and growth of the spiny dogfish in the waters off New England. Many of the tagged dogfish are expected to be caught during the summer in Massachusetts and Maine coastal waters. Finders of tagged dogfish should take them to the nearest Federal or state fisheries representative, or mail only the tag to the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass., giving the date and place the fish was caught.

Previous dogfish tagging experiments conducted by the Woods Hole Laboratory have shown that these small sharks make regular seasonal migrations from one area to another. Several dogfish tagged on Jeffreys Ledge in 1956 were recaptured over a period of years from one area off Portland, Maine, while one was recaptured on Georges Bank this past spring, five years after it was tagged. A dogfish tagged in 1960 on Stellwagen Bank was recaptured this year in a fish trap in Buzzards Bay.

Oregon

ALBACORE TUNA STUDY LAUNCHED: An exploratory cruise to study albacore tuna movements off the Oregon coast was launched on June 29, 1961, by Fish Commission of Oregon personnel. Twelve days were scheduled for collecting basic oceanographic data and studying migration and distribution of tuna.

The fishing vessel Minnie was chartered by the Commission for the cruise, which was to be conducted from 40 to 140 miles offshore. Surface temperatures, salinity, and clearness of the water was to be recorded. Charts showing temperatures at various depths, and observations by use of a light lowered into the water at night to attract fish, were also to be made. These records are important in plotting migration patterns and distribution of the albacore. All of the albacore caught will be tagged and released so that their migratory habits can be further investigated.

These studies are being made by the Commission in an attempt to correlate oceanographic data with the presence or absence of albacore off the Oregon coast. The information will be made available to the troll fishing fleet so the fishery can be carried out with a greater degree of efficiency.

* * * * *

NEW POND FOR REARING SILVER SALMON UNDER NATURAL CONDITIONS: Stocking the Wahkeena Salmon Rearing Pond with 100,000 silver salmon fingerlings marked the completion late in May 1961 of the Oregon Fish Commission's newest experimental salmon-rearing facility.

The new 20-acre fish-rearing lake borders the Columbia River Highway, near Multnomah Falls, Multnomah County. Construction was financed by Federal funds, made available to the Fish Commission through the provisions of the Columbia River Fisheries Development Program. This Federal aid plan is designed to alleviate some of the damaging effects to the Columbia River fisheries due to dam construction on the Columbia River and its tributaries.

The silver salmon fingerlings were hatched at the Fish Commission's Sandy Hatchery from eggs taken from adults trapped at Cedar Creek, a tributary of the Sandy River.

The young salmon will be on their own for the next several months, feeding on insects and other natural foods available in the pond. When they are a year old, they will be allowed to escape into the Columbia River to begin the downstream trip to the ocean where they will remain until approaching maturity lures the survivors back into the Columbia River on the spawning run to the home waters, the outlet of Wahkeena Pond.

Pond-rearing of salmon is relatively new in the Pacific Northwest. The technique is showing considerable promise in Oregon, with the most outstanding success to date being that of the Fish Commission's silver salmon rearing project at Millicoma Pond in Coos County where about 80 percent of the fingerlings placed in the pond reached the yearling state. These fish showed an excellent rate of growth and were in prime condition when released into the Coos River.

Outstanding features of natural pond rearing include low production cost, through the elimination of the necessity for artificial feeding, and the high quality of young fish produced.

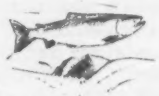
* * * * *

SALMON PASSAGE PROBLEM ON McKENZIE RIVER:

A taxi service for chinook salmon as of June 1961 is in operation on the South Fork of the McKenzie River under the supervision of Oregon Fish Commission personnel. Site of the unusual fish transport installation is the U. S. Army Corps of Engineers' Cougar Dam construction project.

A serious fish passage problem at Cougar arises from the fact that the velocity of the water passing through the diversion tunnel, into which the South Fork has been directed during dam construction, is so high that adult salmon are unable to swim against it on their upstream migration.

The temporary passage facility, operated under the Commission's direction, consists of a steel and cement diversion rack extending at an angle across the river and so placed that upriver migrant fish are guided into a 1,000-gallon steel holding tank placed in a pit at one end of the rack. When a sufficient number of salmon have entered the trap, the tank is lifted by crane onto a truck, which then hauls the fish to a point well above the construction site and releases them into the river to continue the one-way trip to fulfill their destiny on the spawning grounds. A pair of tanks, one of which is placed in trapping position while the other is being used to haul fish, assures that the trapping operation will be continuous.



Oysters

NEW DISEASE DISCOVERED IN VIRGINIA:

While searching for the destructive Delaware Bay oyster disease, a new disease has been discovered by Virginia scientists of the Virginia Institute of Marine Science. A marine biologist from the Institute's Wachapreague station followed the June 1961 epidemic and made daily collections from trays and beds on Virginia's Eastern Shore.

This new protozoan organism, the discovery of which was announced on June 6, 1961, has been called SSO (Seaside Organism) because it occurs entirely on the seaside of Eastern Shore. The disease has been called "curdle disease" because of its effect on oyster tissue.

SSO is a somewhat sneaky killer which attacks oysters during the oystermen's off-season in May and June. Heavy losses are suffered on beds of old oysters held beyond their usual harvesting period, but damage is minor to beds of young oysters. The period of losses from SSO is short--about six weeks--with peak losses occurring the first week in June.

SSO is evidently an adjusted oyster parasite which has been on the seaside of Eastern Shore a long time. As such, it presents no great problem to the oyster farmer and is harmless to the consumer.

Salmon

ATTACK PLANNED ON HATCHERY DISEASE:

At a conference early in 1961, representatives of state agencies of Washington, Oregon, and California, and the U. S. Bureau of Commercial Fisheries met with Bureau pathologists and hatchery biologists to consider research on "coagulated yolk disease" which has caused severe losses of salmon and trout at western hatcheries.

Although cause of the disease is not known, the group considered 20 possible causes, ranging from bacteria and viruses to parasitic infection, handling, inherited susceptibility, and quality of the water in which the fish are held.

A new coordinated study of the disease and possibilities for its prevention was agreed upon among the researchers. The plan calls for division of study into such categories as histopathology; heredity; effects of metals and of metabolic wastes; bacteria; temperature and water chemistry influences; and the effects of routine treatment of eggs and fry for fungus infections.

The group will meet again in the spring of 1962 to review results and plans for further exploration of the disease.

Sea Lions

POSSIBILITY OF DEVELOPMENT OF AN INDUSTRY:

Research to control the Steller sea lion, which too often wreaks havoc on fishing gear and catches during harvest time and which is accused of preying on valuable fishing stocks at other times, may result in a new industry, according to a report issued recently by the U. S. Bureau of Commercial Fisheries.

The report summarizes an experimental sea lion harvest conducted by a commercial fishing company under contract with the Bureau. Pertinent information from earlier biological studies is included in the report.

The experimental harvest yielded more than 200 tons of high-protein ground meat which was sold through established channels to fur farmers feeding mink. The report notes a big demand for high-protein, low-fat, meat by the fur farms and fish hatcheries of western and midwestern States. Possibilities for other uses exist but these are dependent upon a stable annual harvest. Sea lion meat is about 73 percent water, five percent fat, and more than 20 percent protein.

Numerous complaints have been made by fishermen and fishing companies for a number of years concerning the depredations of sea lions. There has been no incentive to control the sea lion by annual harvest because the hide is practically valueless for commercial use and because there was little or no apparent market for the meat commensurate with the cost of harvest.

The Bureau studies and those conducted by the Fisheries Research Institute of the University of Washington and the Alaska Department of Fish and Game indicate that there are enough sea lions in Alaskan water to support a commercial operation. There are an estimated 150,000 sea lions in the Alaska area. The Bureau says in its report, "providing that facilities for processing can be improved the potential for a commercial operation is high." The Bureau recommends that specialized equipment should be used to reduce the amount of labor required to process the 2,000-pound carcasses.

An additional hazard is the weather, the report says. During the breeding season, which is the best time to harvest, the sea lions occupy rookeries along the windswept Alaska Peninsula. At times, inclement weather makes harvesting impossible.

During the experimental harvest the harem bulls made up most of the harvest. Their places were taken immediately by bachelor bulls. Harvest of male animals would likely not decrease the herd appreciably for a long while. If studies indicate that a sharp reduction in the herd is necessary, the harvest would have to include female sea lions.

Anyone interested in commercial harvest of sea lions should acquaint himself with both the Federal and Alaska State fishery regulations.

Shellfish

NEED FOR MORE RESEARCH STRESSED BY INTERIOR DEPARTMENT:

Proposals for a greatly expanded shellfish research program were placed before the Congress on May 22, 1961, by the U. S. Department of the Interior.

In a letter to the Chairman of the House Committee on Merchant Marine and Fisheries, Assistant Secretary Frank P. Briggs urged the passage of a bill (H.R. 2894) which would provide for the construction of a shellfish laboratory at Milford Conn. The report declared that present facilities are too small for the new phases of shellfish research which are now possible and necessary.

"Our development of techniques in recent years for artificially spawning and rearing oysters and clams has opened numerous possibilities for more productive research toward solving many important industry problems," the Assistant Secretary explained in his letter. "Such methods of artificially producing seed, selective breeding for desirable characteristics, and chemical control of predators now appear possible. Much of this research has been accomplished with small numbers of shellfish in the laboratory; however, it is important to note that seed production and selective breeding will require the growing of a large number of bivalves under controlled conditions for considerable periods of time. Our present facilities are inadequate to allow suitable development of the techniques that will be of material aid to the industry."

To carry out the work, the U. S. Bureau of Commercial Fisheries will need such special facilities and equipment as an extensive sea-water system consisting of storage and settling tanks, filtering and ultraviolet treatment equipment, a heating system, and nontoxic piping and pumps. Special constant-temperature rooms are needed for raising shellfish food and for controlled experiments.

The plans include pilot-plant studies of the commercial possibilities of shellfish hatchery procedures as well as training personnel from the industry and from State conservation agencies in the use of these methods.

Tuna

ALBACORE FISHING FORECAST OFF WEST COAST OF NORTH AMERICA, 1961:

For the past year, scientists at the U. S. Bureau of Commercial Fisheries Biological Laboratory, San Diego, Calif., have been analyzing historical oceanographic, meteorological, and fishing records in an effort to understand variations in availability of the albacore tuna off the west coast of North America. The ultimate objective of this analysis is the accurate prediction of the distribution and availability of albacore from year to year as a practical aid to the fishing industry. Various sources of data are being used in the analysis: historical meteorological data from the Extended Forecast Section, U. S. Weather Bureau, Washington, D. C.; current synoptic weather and sea temperature information from ships at sea via U. S. Weather Bureau teletype circuits; historical sea temperature data from the U. S. Bureau of Commercial Fisheries Biological Laboratory, Stanford; salinities and sea temperatures from California Cooperative Oceanic Fisheries Investigation reports; coastal water temperatures from Scripps Institution of Oceanography; and albacore catch and landings data from the California Department of Fish and Game.

Forecasts will necessarily be restricted until the analysis of the historical data is completed, detailed up-to-date albacore catch and effort data are available, and it is possible to gather more oceanographic data at sea currently. On the basis of relationships so far uncovered, a limited prediction for the area south of the International Border (United States-Mexican) is possible for 1961. It is based on the following assumptions: (1) large-scale trends now established in the ocean climate will persist into the summer; (2) the albacore will respond to the ocean environment as it has in the past; and (3) fishing effort will be similar to that in the past. Any major changes that may occur which substantially alter these assumptions will accordingly affect forecast reliability.

Table 1 - California Landings of Albacore Tuna, 1945-1959

Year	Landings from South of International Border	Landings from California Waters
	.....(Million Pounds).....	
1959	0.00	32.52
1958	0.72	25.39
1957	20.91	22.61
1956	21.06	15.87
1955	19.69	9.31
1954	11.82	14.29
1953	20.49	13.30
1952	26.70	23.10
1951	17.62	13.28
1950	23.60	38.14
1949	23.58	20.40
1948	25.93	10.50
1947	5.76	7.40
1946	8.96	9.10
1945	12.26	8.78
Annual Average	15.94	17.60

The fishery will begin farther south than in the past three years and 10.0 million pounds of albacore will be taken from south of the International Border. The average catch from that region for 1945 to 1959 was 15.9 million pounds (table 1).

The data suggest that the fishery should reach as far south as Guadalupe Island, and even though the center of abundance will probably remain offshore, a limited to moderate coastal fishery may develop.

It is too early in the year to permit a prediction for regions north of the International Border. For previous years, relationships have been noted between temperature in June and early July and area of catch off Oregon and Washington. Sea surface temperature from the northern region will be examined continously and industry will be kept advised of the interpretation of the information if it is thought useful in suggesting whether or not there will be a substantial fishery off Oregon later in the year.

* * * * *

FIRST 1961 SEASON CATCHES OF ALBACORE MADE BY BUREAU RESEARCH VESSEL:

On June 6, 1961, biologists aboard the U. S. Bureau of Commercial Fisheries research vessel Black Douglas reported catching 3 albacore tuna--the first of the season. The albacore were taken about 350 miles west of San Pedro (34° 56' north latitude, 124° 27' west longitude) in waters with a temperature of 59.9° F. The research vessel was engaged in a 3-week albacore-oceanographic cruise which began on June 1, 1961.

United States Fishing Fleet[1/] Additions

APRIL 1961:

A total of 34 vessels of 5 net tons and over were issued first documents as fishing craft, during April 1961, a gain of 10 vessels over April 1960. The Pacific area led with 14 vessels, while the Chesapeake

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft By Tonnage, April 1961

Net Tons	Number
5 to 9	14
10 to 19	13
20 to 29	1
30 to 39	2
40 to 49	2
90 to 99	1
190 to 199	1
Total	34

1/Includes both commercial and sport fishing craft.

followed with 9, and the Gulf with 7. The New England, South Atlantic, and Great Lakes areas contributed the remaining 4 vessels.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft By Areas, April 1961

Area	April		Jan.-Apr.		Total
	1961	1960	1961	1960	1960
	(Number)				
New England	2	2	11	5	34
Middle Atlantic	-	-	1	5	13
Chesapeake	9	4	21	13	76
South Atlantic	1	1	12	15	45
Gulf	7	3	31	16	85
Pacific	14	14	37	33	138
Great Lakes	1	-	4	3	17
Puerto Rico	-	-	2	-	-
Total	34	24	119	90	408

Note: Vessels assigned to the various areas on the basis of their home ports.

A total of 119 vessels were issued first documents as fishing craft during the first 4 months of 1961--29 more than during the same period of 1960.

U.S. Fish Meal and Solubles Production and Imports, January-April 1961

During the first four months of 1961, the United States production of fish meal amounted to 13,800 tons, compared with 16,100 tons for the same period in 1960. In 1961 there was a drop of a little more than 4,000 tons in tuna and mackerel meal, but menhaden meal was up 2,000 tons. Production of other types of fish meal in 1961 was below the comparable period in 1960.

U. S. Supply of Fish Meal and Solubles, January-April 1960-61 and Total for 1960

Item	January-April		Total
	1961	1960	1960
	(Tons)		
Fish Meal:			
Domestic production:			
Menhaden	4,165	2,119	218,423
Tuna and mackerel	6,490	10,655	26,325
Herring, Alaska	-	-	6,071
Other	3,080	3,344	38,897
Total domestic production	1/ 13,735	1/ 16,118	289,716
Imports:			
Canada	9,879	14,786	30,982
Peru	45,324	22,388	68,156
Chile	3,582	5,245	21,183
Angola	1,433	-	888
Union of South Africa	3,036	3,195	7,073
Other countries	139	87	3,279
Total imports	63,393	45,701	131,561
Available fish meal supply	77,128	61,819	421,277
Fish Solubles (wet weight):			
Domestic production 2/	7,820	8,841	98,929
Imports:			
Canada	465	273	869
Denmark	-	1,858	1,858
Other countries	264	179	447
Total imports	729	2,310	3,174
Available fish solubles supply	8,549	11,151	102,103

1/Based on reports from firms which accounted for 93 percent of the 1960 total production.
2/Includes production of homogenized-condensed fish.

Imports of fish meal for the first 4 months in 1961 totaled 63,400 tons--17,700 tons more than in the same period in 1960. Imports from Peru (45,300 tons) during January-April 1961 comprised about 70 percent of the total, and were more than double the imports from that country in the same period of 1960. Canada was the next largest supplier with 9,900 tons, but still imports were down 5,000 tons as compared with the first 4 months of 1960. The British Columbia 1960/61 herring fishing season started in November 1960 following a tie-up of the fishing vessels for about a year because of an ex-vessel price disagreement. The season closed early in March.

The remaining 8,000 tons of imported fish meal during the first 4 months were from Chile, Union of South Africa, and Angola. Only very small quantities were received from other countries. Market conditions for domestically-produced and imported fish meal improved considerably since the end of 1960, and prices advanced steadily from the beginning of the year through April.

Loaded menhaden purse seiners awaiting turn to unload catch at industrial products plant in Empire, La.

During the first 4 months of 1961, the domestic production of fish solubles amounted to 7,800 tons--a drop of 1,000 tons as compared with the same period in 1960. Imports of fish solubles January-April 1961 totaled only 700 tons as com-

pared with 2,300 tons for the comparable period in 1960. Very low prices were responsible for the drop in domestic production and imports of fish solubles.

Both in the United States and in foreign countries the solubles are being added to the meal to produce "whole meal." Markets for fish solubles also showed some improvement in the early months of 1961 although not to the same extent as for fish meal.

U.S. Foreign Trade

EDIBLE FISHERY PRODUCTS, APRIL 1961:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during April 1961 decreased by 16.3 percent in quantity and 24.5 percent in value as compared with March 1961. The decrease was due primarily to lower imports of fillets other than groundfish fillets (down 1.2 million pounds), frozen albacore (down 2.8 million pounds), canned tuna in brine (down 1.8 million pounds), lobster and spiny lobster (down 1.6 million pounds), and frozen shrimp (down 1.1 million pounds). The decrease was partly offset by an 0.4-million-pound increase in the imports of frozen tuna other than albacore.

Compared with April 1960, imports in April this year were lower by 7.8 percent in quantity and 7.5 percent in value due to lower imports of canned tuna in brine (down 1.7 million pounds), lobster and spiny lobster (down 1.4 million pounds), and canned salmon (down 1.0 million pounds). Compensating, in part, for the decrease was an increase of about 1.5 million pounds in the imports of frozen shrimp.

U. S. Imports and Exports of Edible Fishery Products, April 1961 with Comparisons

Item	Quantity			Value		
	April		Year	April		Year
	1961	1960	1960	1961	1960	1960
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & shellfish:						
Fresh, frozen & processed 1/	70.1	76.1	1,011.2	20.9	22.6	304.8
Exports:						
Fish & shellfish:						
Processed only 1/ (excluding fresh & frozen)	1.7	3.5	48.7	1.1	1.3	19.2

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in April 1961 were higher by 2.1 percent in quantity and 10.0 percent in value as compared with March 1961. Compared with the same month in 1960, the exports this April were lower by 51.3 percent in quantity and 15.4 percent in value. The lower quantity of exports in April this year as compared with the same month in 1960 were due mainly to sharply lower exports of California canned sardines and squid.

* * * * *

IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY-MARCH 1961:

Imports: The leading suppliers of groundfish and ocean perch fillets and blocks--Canada, Iceland, Norway, and Denmark--sent increased quantities of these products to the United States the first quarter of 1960. Principal increases were in imports of fish blocks from Canada and Iceland. The increase in fresh and frozen tuna imports was primarily the result of greater shipments from west Africa and from Trinidad into Puerto Rico.

Table 1 - U. S. Imports of Selected Fishery Products, January-March 1960 and 1961

Commodity	Jan.-Mar. 1961	Jan.-Mar. 1960
	(1,000 Lbs.)	
Groundfish and ocean perch:		
Fillets	20,891	19,015
Blocks or slabs	27,514	13,179
Total	48,405	32,194
Flounder fillets	3,008	2,733
Swordfish	6,644	4,852
Tuna, fresh or frozen:		
Albacore	25,883	23,861
Other	28,985	25,736
Total	54,868	49,597
Tuna, canned in brine:		
Albacore	6,130	2,284
Other	5,779	6,649
Total	11,909	8,933
Tuna, canned in oil	133	334
Bonito, canned	3,164	2,951
Shrimp	31,617	24,798
Crab meat, canned	996	929
Scallops, fresh or frozen	1,026	887
Fish meal	88,666	70,608
Fish solubles	1,018	4,352
Lobsters:		
Northern	3,031	2,857
Spiny	11,362	10,319
Oysters, mostly canned	2,429	1,477
Salmon:		
Fresh or frozen	1,718	1,427
Canned	1,332	10,083
Sardines:		
Canned in oil	7,375	5,483
Canned not in oil	3,830	3,079

The rise in imports of tuna canned in brine was mainly caused by an increase in

Japan's albacore shipments. Country-by-country data on shrimp imports show that all leading suppliers, except Japan, increased their shipments to the United States. Mexico's shipments increased by 22 percent; those from El Salvador and Iran nearly doubled. Imports of fresh or frozen lobster and spiny lobster from the Union of South Africa and Canada increased while imports from Australia declined. The drop in canned salmon imports was largely accounted for by the 91-percent decrease in imports from Japan.

Norway supplied more than half of the canned sardines in oil, and Portugal sent nearly 30 percent. Japan increased shipments of canned crab meat by 8 percent and continued to be practically the only supplier of that product. Likewise, Japan again sent over 95 percent of the total canned oyster imports. A decline in receipts of fresh or frozen sea scallops from Japan was more than offset by an increase in receipts from Canada. Fish meal imports from Peru increased 76 percent as that country supplied 69 percent of these imports. Shipments from the Union of South Africa also were up, but those from Canada and Chile were down considerably. Denmark, supplying 85 percent of the imports of fish solubles one year ago, did not send any to the United States in the first quarter of 1961.

Exports: In the first quarter of 1961, the two leading foreign markets of the United States for canned sardines not in oil--the Philippines and Ecuador--took only one-fourth the quantity taken during January-March 1960. No exports went to Cuba. The United Kingdom took 42 percent of the total canned salmon exports, and Canada and Australia increased their purchases substantially. Exports of fresh or frozen salmon to Canada were down about two-thirds. Canada took 62 percent of the canned and fresh or frozen shrimp. A sharp reduction in canned squid exports is the result of an unfavorable change in Philippine exchange classification putting squid in the non-essential consumer category. Exports of fish oils increased by sizable amounts, i.e., Canada, over 100 times; Norway, almost 3 times; and Belgium, from nothing to 1,322,000 pounds. This trade to Sweden declined from 6,642,000 pounds to nothing, and West Germany took less than half its January-March 1960 quantity.

Table 2 - U. S. Exports of Selected Fishery Products, January-March 1960 and 1961

Commodity	Jan.-Mar. 1961	Jan.-Mar. 1960
	(1,000 Lbs.)	
Fish oils	36,549	29,053
Oysters, shucked	249	218
Salmon:		
Fresh or frozen	197	389
Canned	2,649	1,350
Mackerel, canned	976	474
Sardines:		
Canned not in oil	3,085	6,912
Canned in oil	65	57
Shrimp:		
Frozen	638	636
Canned	561	604
Squid, canned	413	4,577
Misc. canned fish, mostly Calif. anchovies	156	238

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty is 57,114,714 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports from January 1-June 3, 1961, amounted to 20,035,659 pounds, according to data compiled by the Bureau of Customs. From January 1-June 4, 1960, a total of 18,262,874 pounds had been imported.

* * * * *

FISHING TACKLE IMPORTS, 1960:

Imports of fishing tackle by the United States, valued at $10,197,461 in 1960 declined 4.7 percent from the 1959 all-time peak of $10,696,808.

A combination of causes probably brought about the 1960 decrease in imports. Among these was the exceptionally high influx of imports in 1959 which increased 56.0 percent over 1958 imports. This was the largest year-to-year percentage increase since 1950 and contrasted sharply with the annual average rate of increase of 20.7 percent in the growth of imports from $1,552,992 in 1950 to the 1960 figure.

Despite the over-all decline, four classes of tackle imports increased in value in 1960. These were leaders and casts, fishing rods, baskets and creels, and tackle and parts, not specially provided for, except lines, nets, and seines.

The number of reels imported fell 1.3 percent to 3,377,457 in 1960 from the 1959

figure of 3,420,411 and the value declined 4.3 percent to $5,976,152 from $6,246,153. In both years reels accounted for 58 percent of all tackle imports.

Purchases from Japan declined in quantity from 2,681,891 in 1959 to 2,657,700 in 1960, but the value increased from $2,194,965 to $2,326,316. As a result the unweighted average price or value of Japanese reels in 1960 increased to 88 cents each from 83 cents in the prior year. Quantitywise, reel imports from Japan held steady at 78 percent of the total while dollarwise her share increased from 35 to 39 percent.

Most noteworthy in the reel import data is the loss in sales by Sweden. Quantity dropped from 175,048 to 141,280 and value fell off from $1,093,537 to $885,218. Percentagewise this was a drop of about 20 percent in both unit and dollar volume.

Fishhooks, other than snelled, the second largest of current classes of tackle imports, made the largest drop percentagewise of all classes in 1960. The 19.9 percent fall from $1,310,710 in 1959 to $1,050,598 in 1960 was sustained almost entirely by shipments from Norway and Japan. Imports from Norway, traditionally the largest supplier to the U. S. market, fell 18.4 percent from $920,913 in 1959 to $751,896. Percentagewise, imports from Japan for the same period fell off 40 percent and amounted to $246,875 in 1959 and $149,561 in 1960.

Contrariwise, hook imports from the United Kingdom, the third largest supplier by volume, increased from $116,041 to $129,325.

Prior to 1960, the second largest class of imports was described as fishing tackle and parts n.s.p.f. (not specially provided for) except fishing lines, nets, and seines, including artificial baits, fly books, fly boxes, artificial flies, and snelled hooks. This class in 1959 accounted for imports valued at $1,996,879. In 1960 this major class was divided into four classes for each of which imports were as follows: Artificial baits not including flies, $742,773; artificial flies, $148,051; snelled hooks, $230,599; and other fishing tackle, including fly books and fly boxes, $883,133. Had the class remained intact, the 1960 value would have been $2,004,556 for an increase of about 4 percent.

Trade with the United States in the foregoing four classes is dominated by Japanese products. In 1960 these accounted for 76.5 percent or $1,534,261 of the total: 57.4 percent of artificial baits, amounting to $426,513; 95.1 percent of artificial flies, $140,910; 84.2 percent of other tackle, $743,720; and 96.8 percent of snelled hooks, $223,121. France and Sweden also participated in this trade. France supplied 19.4 percent or $144,132, and Sweden, 17.5 percent or $130,083 worth.

Imports of Japanese fishing rods averaged 71.5 cents each in 1959 and 81.8 cents each in 1960. Trade reports indicate this increase may be due to a higher ratio in the total of fitted fiberglass rods than heretofore. Virtually all the imports were supplied by Japan.

Rod imports from all countries were valued at $486,939 in 1960 and showed a 10.4-percent increase over the 1959 figure of $440,878. Unit volume, however, declined from 609,809 rods to 594,816.

Rod parts are supplied to the U. S. market principally by Japan, Germany and Portugal. In every instance the 1960 figures are lower than those for 1959. Moreover, excepting Portugal, the percentage decreases for each were lower than those for the entire class. Total imports fell off 13.6 percent from $278,512 to $240,504. Imports from Japan fell 19.3 percent from $46,904 to $33,168; Germany, 22 percent, from $77,550 to $60,521. Portugal's sales dipped only 6.8 percent from $145,675 to $135,845. Six other countries participated in a small way in this trade in either 1959 or 1960 but only Spain had trade in both years: 1959, $4,780; 1960, $2,675.

Leaders and casts increased 16.6 percent in 1960 in dollar volume and decreased 31.8 in unit volume from 1959 levels. Total unit volume decreased from 431,268 dozen to 291,614. Dollar volume rose from $68,454 to $79,857. Japan supplied all but a small part.

Baskets and creels, supplied principally by Japan and Hong Kong, increased 8 percent in unit and 18 percent in dollar volume. Japanese shipments to the United States decreased from 7,474 units, valued at $63,588, in 1959 to 71,544 units, valued at $67,592, in 1960. Those from Hong Kong in the 1959-

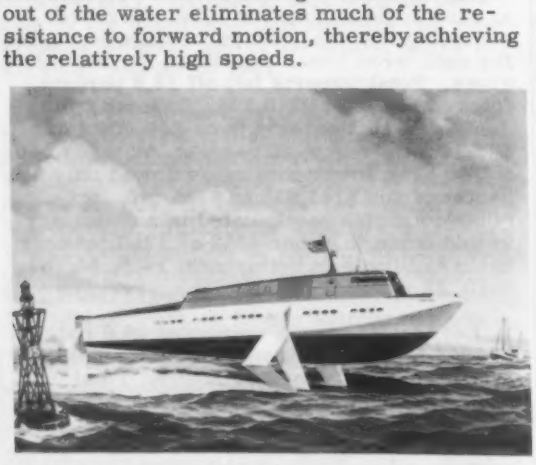
60 period increased from 48,775 units to 61,976 and gained in value from $26,551 to $38,358.

On the basis of dollar volume of shipments, the nations supplying the major U. S. imports of tackle remained in the same relative positions in 1960 as in 1959, except that the United Kingdom moved up from eighth to seventh place while Portugal dropped from seventh to eighth. (Foreign Commerce Weekly, May 15, 1961.

Vessels

FIRST OCEAN-GOING HYDROFOIL CRAFT NEARING COMPLETION:

In the next year or two, Americans living along major rivers, on the Great Lakes, or the bays and harbors of the United States may see a 60- to 100-foot ship skimming along at some 60 to 70 miles an hour with its hull completely out of the water. Such craft exist today and more are on the way. They are hydrofoil craft which, put simply, skim the water on skis. Raising the entire hull out of the water eliminates much of the resistance to forward motion, thereby achieving the relatively high speeds.



Artist's conception of an 80-ton, 60 to 80 knot ocean-going hydrofoil craft. Forward motion of craft will lift the ship out of the water where it will run supported by the hydro-dynamic lift of its foils, thus avoiding the drag of the friction created by contact of the hull of the ship with the water.

One such craft, a massive 104-foot, 80-ton hydrofoil to be christened the Denison, is being built for the U. S. Department of Commerce's Maritime Administration in a research-and development program that may have wide implications for the future, both in domestic waters and offshore travel.

The first hydrofoil craft in the world to be designed specifically as an oceangoing vessel, the H.S. (Hydrofoil Ship) Denison is nearing completion at Bethpage, Long Island, N. Y., under a Maritime Administration contract with Dynamic Developments, Inc., an affiliate of Grumman Aircraft Engineering Corp., and should be ready to take to the water by late summer or early fall, the U.S. Department of Commerce announced on July 4, 1961.

The contract to build the craft was negotiated after design studies had indicated its feasibility. The government is paying about $1.5 million of the estimated $5 million value of the ship, the remainder of the production costs being borne by interested firms. The ship will utilize a 19,000 shaft horsepower gas turbine power plant and be capable of speeds up to some 60 knots or about 70 miles per hour.

Constructed of aluminum alloy, the 104-foot Denison will have a 21½-foot beam, 6½-foot draft (17¾ feet with the foils down), 80 tons displacement, and be capable of carrying a payload of 37 tons of cargo and fuel combined.

With the foils retracted, the ship can maneuver in some 6 feet of water at a speed of 8 knots under auxiliary power.

The 37 tons of weight which the ship is capable of carrying must be distributed between cargo in the form of individuals or goods, and the necessary fuel and operating personnel. Obviously, if the range is short, less fuel will be required for a trip with an attendant increase in commercial cargo carrying capacity. It is estimated that a trip of 850 miles would permit the carriage of 10 tons of paid cargo or the equivalent in passengers.

Designed to cruise at 60 knots, the "take-off" speed, or speed required to lift the hull out of the water, when fully loaded will be 30 knots. While foil-borne, the craft's turning radius will be approximately 1,000 feet. The design hull clearance is 5 feet above the surface of the water, and the craft should be capable of operating in 5- to 7-foot waves without undue slamming.

Test and technical evaluation of the H. S. Denison should be completed in early 1962, at which time plans call for placing the ship in commercial service.

Already 28 firms have applied for consideration as operators of the ship. Applicants proposed a wide variety of projected services, ranging from commuter service in metropolitan areas, service from the United States mainland to Bermuda, and also to Nassau, an inter-island service for the State of Hawaii, other contiguous and noncontiguous domestic services, and U. S.-Foreign in the Caribbean and Gulf of Mexico. Other areas of suggested commercial operation included deep-sea fishing, offshore drilling operations, and use on the Atlantic Missile Range.

In addition to interest of private companies in commercially operating the Denison, two companies have been inspired by the Maritime Administration's research and development into hydrofoil craft and their possible use to begin planning the construction and operation of their own ships.

It is known that the Russians have built at least two experimental commercial hydrofoil motor ships suitable for operation on their many rivers, lakes, and canals. One vessel, the Raketa, is of 24 tons, has a seating capacity of 66 persons, and travels at a speed of 40 miles per hour. The other, the Meteor, is of 53 tons, has a capacity of 150 passengers and a speed of 45 miles per hour. The Russians have announced plans to build 200 Raketa-type and 85 Meteor-type ships. Reportedly, 60 of the smaller craft are already in operation.

To date, however, the nearly completed H. S. Denison is the first such craft in the world designed for ocean-going operation. It is also believed to be the largest built to date, and may well be the forerunner to a new era in transportation.

Virginia

SCIENTIST EXPRESSES HOPE FOR OYSTER INDUSTRY:

A ray of hope for improvement of the Virginia oyster industry within the near future was expressed by a scientist of the Virginia Institute of Marine Science. Virginia oysters are currently in the throes of an epidemic caused by the infectuous organism called MSX.

"Evidence is building that oysters exposed to MSX from spat size have much lower mortalities later as adults than oysters first exposed to the disease as large oysters," reports the scientist. "This acquired resistance is a very important and conspicuous feature of our resistance to so-called children's diseases such as measles, chickenpox, and polio. Perhaps in a year or two we can begin using seed from such places as Brown Shoal and Wreck Shoal (where the disease has been active) with much better success than we are having now with James River seed. This means that the future of the oyster industry may depend more upon using seed from infested areas than from disease-free areas."

The Gloucester Point laboratory of the Institute has been conducting a full program of research and field study of the oyster disease since its introduction into Chesapeake waters in 1959.

There is no cure-all in sight for the complex problem presented by the oyster disease. The use of chemicals to eradicate the organism is questionable since the tremendous water mass of the bay and rivers would make this prohibitive.

The Institute staff is cooperating with other scientific groups (including Rutgers University, Maryland Department of Research and Education, U. S. Fish and Wildlife Service at Oxford, Md., and the University of Delaware) in discovering the life history of the MSX organism. This information will be useful in developing oysters resistant to the disease.

Turning to the present extent of damage by MSX, the scientist pointed out: "In the past year the lower half of the James River seed area has become infested, and the Rappahannock beds below Towles Point (Urbanna) have shown a rapid increase in intensity of disease. ...

"Infected material from Hampton Roads has apparently followed the channel up the James to form a 'tongue' of infested area in the seed beds. Wreck Shoal is badly infested (about one-third of larger oysters, but fewer spat and yearlings) although few

deaths have occurred yet. Infections are much less severe inshore of the channel on either side of the river. Brown Shoal has already had a big death rate, and over half the survivors are infected. Heavy losses are expected in infested areas throughout the rest of the summer.

"MSX is still rare above Hoghouse (Urbanna) in the Rappahannock River, although it can be expected to go higher before the year is out. At present no mortality in upper Rappahannock is expected before August, and whether a late summer loss occurs will depend upon how effectively the lower Rappahannock River oysters provide infective material to the upper river. Upper Rappahannock River oysters are essentially free of disease now."

It has been determined that MSX is an organism that affects oysters only, and is harmless to humans.

Whaling

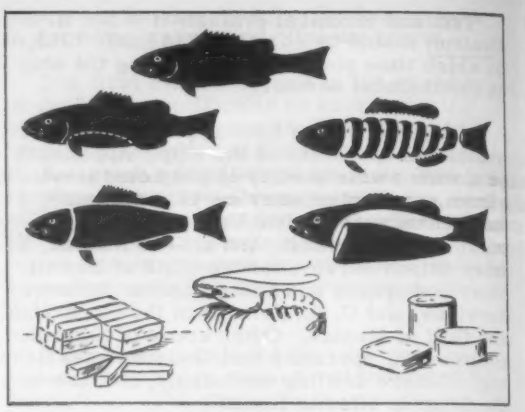
CALIFORNIA WEST COAST LAND STATIONS LICENSED FOR 1961 SEASON:

For the United States 1961 whaling season, 2 California land stations, 2 secondary processing stations, and 5 whale catchers had been issued licenses as of the end of April. In addition, there was one license pending for a land station with one catcher vessel in Oregon.

Wholesale Prices, June 1961

Due to changes made periodically in the weightings assigned to the product groups used in the wholesale price index, some slight revisions have been made in the wholesale price index for edible fishery products. The over-all price index for edible fishery products (fresh, frozen, and canned) for June 1961 was 129.5 percent of the 1947-49 average--0.7 percent higher than in May and 2.4 percent higher than in June 1960.

The fresh and frozen drawn, dressed, and whole finfish subgroup index in June 1961 was about unchanged from the preceding month, but was higher by 1.5 percent from June last year. From May to June, price increases of 11.2 percent for fresh large drawn haddock at Boston and 6.2 percent for fresh drawn halibut at New York City were just about offset by a slight price decline for fresh king salmon plus a more substantial decline for Lake Superior drawn whitefish (down 7.6 percent) and Lake Huron or Lake Michigan yellow pike (down 21.0 percent). This June as compared with June a year ago, prices were up for fresh dressed halibut by 10.4 percent, fresh dressed salmon by 3.9 percent, and Lake Superior whitefish by 7.0 percent. Price declines of 15.0 percent for Great



Lakes yellow pike at New York City and 1.6 percent for fresh large haddock at Boston partially offset the increases.

From May to June this year the fresh processed fish and shellfish subgroup rose 2.3 percent. Higher prices for fresh shrimp (up 1.2 percent) and fresh oysters (up 3.5 percent) were responsible for the increase. As compared with June 1960, the prices in the subgroup this June were up slightly (0.4 percent). A price increase of 9.1 percent for fresh oysters more than compensated for price declines of 21.6 percent for fresh small haddock fillets and 5.0 percent for fresh shrimp at New York City.

Wholesale prices this June for frozen processed fish and shellfish were up almost 1.0 percent from a month earlier due to increases of less than one cent a pound for frozen flounder and haddock fillets and frozen shrimp at Chicago. During the same period, the wholesale price for frozen ocean perch fillets dropped 1.7 percent. Compared with June last year, the subgroup price index this June was down 4.4 percent due to a 14.0-percent lower frozen shrimp price at Chicago. Price increases of about 30.0 percent for frozen haddock fillets and 3.6 percent for ocean perch fillets failed to offset the lower price for shrimp.

The canned fishery products subgroup index in June this year remained unchanged from the preceding two months. However, the subgroup index was up about 6.9 percent from last June due to substantially higher prices for canned salmon (up 14.3 percent) and canned California sardines (up 11.8 percent). As compared with June 1960, wholesale prices this June were slightly lower for canned tuna and unchanged for Maine sardines. Packing seasons for Maine sardines and Pacific salmon were under way in June. The early Maine sardine pack was very small, but that for Pacific salmon was encouraging.

The Bureau of Labor Statistics has made a routine revision of the weighting structure of the Wholesale Price Index, including the All Fish and Shellfish Group Index. The weights of the fish group and subgroups have been adjusted in accordance with the value of fishery products for the year 1958 as published by the U. S. Bureau of Commercial Fisheries. This revision is in accord with established policy that the weighting structure be revised periodically.

The revised weights for 1958 were first introduced in the index for January 1961. "Unofficial" indexes, however, were published for the months of January through May 1961 until the computations based on the new weights were completed. Beginning with the June 1961 index, the computations of the indexes were based on the new weights.

The weight adjustment does not result in a break in the series. The adjustments in indexes based on the new weights for all the months this year prior to June are only slight in all cases as far as fishery products are concerned, and only the groups and subgroups are affected. The individual commodity indexes (for example, the index for fresh shrimp at

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, June 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1947-49=100)			
			June 1961	May 1961	June 1961	May 1961	Apr. 1961	June 1960
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					4/129.5	4/128.6	4/126.2	126.5
Fresh & Frozen Fishery Products:					2/	3/140.6	3/136.1	142.0
Drawn, Dressed, or Whole Finfish:					4/151.9	4/151.8	3/139.0	149.7
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.08	86.9	78.1	55.8	88.3
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.37	.35	114.5	107.8	103.1	103.7
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.88	196.6	197.7	191.0	189.3
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.61	.66	151.2	163.6	114.0	141.3
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.57	.72	132.5	167.7	119.6	155.9
Processed, Fresh (Fish & Shellfish):					4/145.4	4/142.1	3/143.4	144.8
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.29	.29	98.7	98.7	90.2	125.9
Shrimp, lge. (26-30 count), headless, fresh.	New York	lb.	.78	.77	122.4	120.9	124.0	128.8
Oysters, shucked, standards	Norfolk	gal.	7.50	7.25	185.6	179.4	179.4	170.1
Processed, Frozen (Fish & Shellfish):					4/113.2	4/112.2	3/113.7	118.4
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	102.1	100.8	100.8	102.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.33	.32	102.0	100.5	100.5	78.5
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	114.8	116.8	116.8	110.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.69	.69	106.5	105.7	107.2	123.8
Canned Fishery Products:					4/112.0	4/112.0	3/112.2	104.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.00	28.00	146.1	146.1	146.1	127.8
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.00	11.00	79.3	79.3	79.3	80.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	4.50	4.50	105.0	105.0	105.0	93.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	93.1	93.1

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.
2/Will not be available until computations are completed.
3/Old series indexes. Revision based on new weighting structure not available until later.
4/New series index based on new weights.

New York City) are not affected. It means that the new indexes based on the new weights can be regarded as continuous with and comparable to series for earlier years.

The present index reference base, 1947-49=100, will be continued throughout 1961. The new reference base (1957-59=100), which has been established by the Office of Statistical Standards of the Bureau of the Budget for use by all Government statistical agencies, will probably be introduced in January 1962.

One commodity has been dropped in the fishery products index as of January 1961--"whitefish, Lake Erie pound or gill net, round, fresh, New York City." The weight assigned to this specification has been assigned to "whitefish, Lake Superior, drawn, fresh, Chicago."

FOREIGN

International

INTERNATIONAL PACIFIC HALIBUT COMMISSION

SURVEY OF HALIBUT AND BOTTOMFISH OFF ALASKA:

The Governments of Canada and the United States are undertaking a comprehensive survey of the distribution and abundance of halibut and other bottom-living fish in the waters on the continental shelf off Alaska. In this region of the Pacific coast, Canada and the United States have jointly participated in an important fishery for halibut for nearly half a century.

The two Governments requested the International Pacific Halibut Commission to plan and conduct the survey in conjunction with its regular investigational program. This Commission has managed the Pacific halibut fishery on behalf of Canada and the United States for the past 35 years and has rebuilt the once-depleted Pacific Coast halibut stocks that produced only 44 million pounds annually prior to regulation but now yield in excess of 70 million pounds each year. Such improvement is unparalleled in any other marine fishery in the world. Most fisheries for other bottomfish are uncontrolled and are in the declining stage.

The program calls for continuous trawling operations during the next 12 months, rigorous winter weather notwithstanding. It will cover the region from the northeastern end of Kodiak Island as far west as Unimak Pass, a distance of 550 miles along the coast involving about 40,000 square miles of area.

From 15 United States and Canadian vessels that tendered bids, 3 have been chartered for the year's operations, the Arthur H, the Morning Star, and the St. Michael.

At the outset each vessel will work a section of the survey area but during the rigorous and lonely months of winter the vessels, though sturdy, will work together.

Each vessel will be manned by its captain, three experienced trawl fishermen, and three members of the Commission's staff who have been secured from the University of British Columbia for the purpose. At the outset of the operation and from time to time during the year permanent members of the Commission's staff will accompany each vessel in a supervisory capacity.

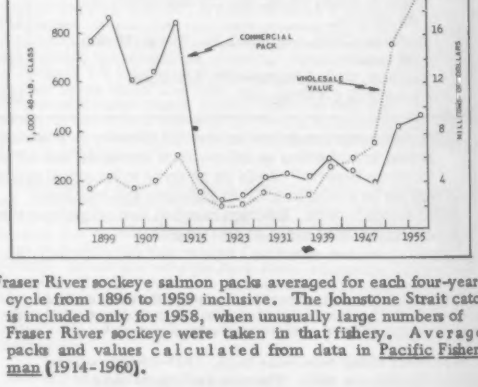
Agencies in both countries, the Fisheries Research Board of Canada and the U. S. Bureau of Commercial Fisheries, have provided all possible aid to the project and will integrate any offshore exploratory fishing for bottomfish with the program of the Commission.

In scope and intensity the program eclipses anything that has ever been done before by Canada and the United States in this field. The program will contribute information of inestimable value to Canada and the United States in their joint management of the Pacific halibut fishery.

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

RESEARCH ON FRAZER RIVER SALMON RUNS PLANNED TO MEET CHANGING CONDITIONS:

Production of Fraser River sockeye or red salmon for the last four-year period has increased 450 percent over similar cycle periods following the Hell's Gate slide. Wholesale value of the catch has increased 10 times, partially due to higher selling prices for the canned product.



Fraser River sockeye salmon packs averaged for each four-year cycle from 1896 to 1959 inclusive. The Johnstone Strait catch is included only for 1958, when unusually large numbers of Fraser River sockeye were taken in that fishery. Average packs and values calculated from data in Pacific Fisherman (1914-1960).

The Commission is confident that complete rehabilitation of Fraser sockeye as well as pink salmon can be accomplished in a few years. However, it is concerned about how to further develop and protect this great job-producing resource to fulfill the needs of a rapidly increasing population.

To meet the challenge of industrialization and the required protection of the fisheries resource, the Commission has substantially increased its activities during the past year.

International (Contd.):

Construction of a unique laboratory will commence shortly in which the water supply can be completely controlled with respect to temperature and chemical content. Proposed research at the laboratory will include studies into the weaknesses of salmon hatcheries, adverse effects of environmental changes due to potential flood control and hydroelectric projects, and the limits of adjustability of salmon populations in transplantation from one watershed to another.

Some of these studies should provide methods for artificially developing the latent potential of the salmon resource. There is also a drastic need for information to protect the resource where possible from the serious effects of industrialization as experienced elsewhere.

The Salmon Commission is working on the problem of development and protection of the salmon resource with increasing vigor to avoid the trial-and-error methods in conservation that have proven to be expensive and often unsuccessful.

Man-made spawning streams are also being studied on a full-scale experimental basis. An artificial spawning channel 3,500 feet long has just been completed for pink salmon at Seton Creek near Lillooet, B. C. The channel is expected to provide spawning area for 10,000 pink salmon of this year's run.

To further meet the problem of poor salmon runs due to unstable spawning grounds, a full-size experimental hatchery has been completed and is now in operation on Upper Pitt River. New methods based on previous Commission studies are being used to improve the operating efficiency of the Station. Other improvements in the operation of the Station will be added when experimentally justified.

New field projects will be undertaken as rapidly as experiments at the new laboratory justify the expense so that the Fraser salmon resource will continue to provide increased wealth to the region. Close liaison will be maintained with other fisheries research agencies to permit the testing and application of any new information as rapidly as possible.

JAPAN-SOVIET NORTHWEST FISHERIES COMMISSION

JAPAN-U.S.S.R. SALMON PACT SIGNED:

Japan and the Soviet Union signed an agreement on May 21, 1961, which established Japan's salmon catch quota for this year in the North Pacific treaty area under the Northwest Pacific Fisheries Commission at 65,000 metric tons--2,500 tons less than last year. The Japan-Soviet Commission's fifth annual meeting began in Tokyo on February 6, and was marked by compromises on the part of both countries as to the size of the quota. At the outset, the Soviet Union had proposed a 50,000-ton catch for Japan, while the Japanese delegation negotiated for 80,000 tons. The Soviet Union's 1961 salmon catch target is 80,000 tons, 10,000 tons above the target for 1960.

The Commission also reached agreement on the following restrictions for Japanese fishing in the North Pacific treaty area: (1) establishment of a new closed area 151.5° to 155° E. and south of 48° N.; (2) establishment of a restricted area north of 56° N.;

Japan and U.S.S.R. North Pacific Salmon and Trout Catches, 1960

Species	U.S.S.R.	Japan					Asian Total
		Gill-net Catches		Long line	Coastwise 1/	Total	
		Mothership	Land-Based				
	(Metric Tons)						
Red	4,000	28,047	2,454	74	-	30,575	34,575
Chum	43,300	20,584	19,070	3,278	533	43,465	86,765
Pink	19,600	2,459	28,080	5,534	2/21,950	58,023	77,623
Silver	1,900	2,387	3,362	228	-	5,977	7,877
King	700	499	519	99	-	1,117	1,817
Total	69,500	53,976	53,485	9,213	22,483	139,157	208,657

1/Data available through August only.
2/Includes Masou salmon, a species peculiar to Oriental waters.

International (Contd.):

(3) observance of the two closed areas south of 48° N. agreed on at the 1960 meeting (during the negotiations, Japan had demanded the abolishment of the no-fishing area established in 1960 on the understanding that it would be in effect for only one year); (4) total catch of red salmon to be limited to 7,750,000 red salmon (about 14,000 tons); (5) catch of red salmon in area west of 165° E. longitude to be limited to 2.5 million reds (that means that the balance of 5,250,000 fish is to be taken between 165° E. and 175° W.); (6) catcher vessels to carry maximum of 330 tans (one tan equals approximately 150 feet) of gill nets per vessel; (7) catcher vessels to carry gill nets of which at least 50 percent are composed of nets with mesh size (knot to knot) of 65 millimeters (about 2.56 inches); and (8) Japan's king crab quota is 260,000 cases (48 6.5-oz. cans). Russia's king crab quota was set at 390,000 cases (96 6.5-oz. cans). (Suisan Keizai Shimbun, March 17, May 13, 21, & 25; Nippon Suisan Shimbun, May 24, 1961.)

NORTHWEST ATLANTIC FISHERIES COMMISSION

ELEVENTH ANNUAL MEETING:

Greater protection and conservation of fish and seal populations in the Northwest Atlantic fishing areas were promised at the eleventh annual meeting of the International Commission for the Northwest Atlantic Fisheries (ICNAF) concluded in Washington, D. C., on June 10, 1961.

Representatives of 12 nations engaged in fishing operations in the ICNAF area, which comprises more than one million square miles, adopted measures designed to produce greater uniformity in the ICNAF conservation regulations.

The six-day meeting also produced agreement among the delegates to take steps toward the conservation of the fast-declining population of harp and hood seals in the area. Following a report by the Canadian delegation that the harp and hood populations "during the last decade have been reduced by 50 to 65 percent," the Commission passed a resolution to amend the present Convention to provide (1) that harp and hood seals of the Northwest Atlantic area be brought under the provisions of the International Convention for the Northwest Atlantic Fisheries and (2) that a separate panel be established for the purpose of dealing with the conservation requirements of the harp and hood seal populations.

The Commission elected the following officers to serve for two years: Commission Chairman: George R. Clark, Deputy Minister of Fisheries, Ottawa, Canada. Commission Vice Chairman: B. Dinesen, Under Secretary of the Fisheries Ministry, Copenhagen, Denmark. The following were elected to serve one-year terms: Chairman of the Standing Committee on Research and Statistics: R.H.J. Beverton, Deputy Director of Research, Ministry of Fisheries Laboratories, Lowestoft, Suffolk, United Kingdom. Chairman of the Standing Committee on Finance and Administration: J. H. MacKichan, General Manager of United Maritime Fishermen, Limited, Halifax, Nova Scotia.

The International Commission for the Northwest Atlantic Fisheries was established under a convention between ten North American and European countries which came into force on July 3, 1950. Since then, two additional Governments have become parties to the convention, namely, the Federal Republic of Germany (1957) and the U. S. S. R. (1958). The present member-nations are: Canada, Denmark, France, Federal Republic of Germany, Iceland, Italy, Norway, Portugal, Spain, Soviet Union, United Kingdom, and United States.

The Commission is engaged in planning and coordinating programs of fisheries research which are carried out by the fisheries agencies of the member governments in the Northwest Atlantic Ocean. Its meetings are largely devoted to reports and discussion of current research and plans for future years. In addition, from time to time, the Commission recommends to Governments the adoption of regulations for certain fisheries of the area, for purposes of conservation of the resources. The Commission is composed of one to three Commissioners from each contracting government and meets annually at Halifax, Nova Scotia, its headquarters, or at some other place in North America or Europe.

International (Contd.):

FOOD AND AGRICULTURE ORGANIZATION

FISH IN NUTRITION MEETING PLANS ALMOST COMPLETED:

A total of 25 major articles summarizing the world's knowledge on nutrition and public health attainments in five major divisions of fishery technology will be presented at the International Conference on Fish in Nutrition to be held in Washington, D. C., September 19-27, 1961. In addition there will be 44 short manuscripts, each presenting the results of research into the many nutritional aspects of fishery products.

Six outstanding nutrition and public health authorities from the United States, Europe, and the Far East have been called to FAO headquarters in Rome, Italy, to thoroughly review and edit the papers. In addition, two fishery technologists of the Bureau of Commercial Fisheries and a consultant from the National Institutes of Health have gone to Rome to offer technical assistance in the editing.

The meeting is sponsored by the Food and Agriculture Organization of the United Nations. The Department of State is the official host. The Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service, is in charge of arrangements with travel funds for foreign researchers being provided by a U.S. Public Health Service grant. An official insignia for the meeting has been adopted by the Food and Agriculture Organization.

The Conference on Fish in Nutrition, which is the first of its kind ever held, will be held in the auditorium of the new State Department building. Fifty nations will be represented by approximately 400 delegates. Representatives of the fishing industry of the United States met in Washington some months ago and pledged their support of the meeting. Some segments of the industry will provide varied entertainment for the guests, while others will acquaint the visitors with United States fish processing and distribution methods by providing tours in certain key industries and areas.

The agenda now being considered includes as main topics such things as the role of fish in world nutrition, the chemical composition of fish and fishery products, contribution of fish and fishery products to the diets of various nations; fishery products in animal nutrition; and possibilities for increasing fish consumption.

Under the main titles are reports on the amino acid composition of the protein in fishery products; fish oils and their role in nutrition; food values of fresh fish compared with processed fishery products; minerals and vitamins in fish; fish in dietetics, including geriatric diets; incidence of world malnutrition, by regions; fish flour and its importance in preventing malnutrition; fish derivatives in feed for swine, calves, poultry, and furbearing animals; economic and social incentives for increasing production; and methods of consumer education.

IRRADIATION OF FOOD

EUROPEAN INFORMATION CENTER ESTABLISHED IN FRANCE:

A European Center of Information about the irradiation of foodstuffs has just been created following an agreement between the European Agency of Productivity of the Organization for European Economic Cooperation (O.E.E.C.) and the Center of Nuclear Investigations, Saclay, France. M. Pierre Leveque was nominated Director of this Center, the headquarters of which are also in Saclay.

The functions of the Center especially include the publication of an information bulletin on the irradiation of foodstuffs which will be issued 4 times a year in English and in French. The Center will also be a linking element between scientific workers and technicians specialized in food problems and between government spheres and the manufacturers interested.

INTERNATIONAL JOINT COMMISSION (UNITED STATES AND CANADA)

PASSAMAQUODDY TIDAL POWER PROJECT NOT ECONOMICALLY FEASIBLE:

The Canadian Secretary of State for External Affairs announced on May 1, 1961, the release of the International Joint Commission's Report on the International Tidal Power Project in Passamaquoddy Bay in Maine and New Brunswick. The Commission found that the price of power from the Tidal Power Project, either alone or in combination with auxiliary power sources, would not be competitive with the price of power from alternative steam-electric plants and that, therefore, the project is not economically feasible under present conditions. The Commission recommended, however, that development of the project be viewed as a long-range possibility which would have better prospects of realization when other less-costly energy sources available to the area were exhausted. The Commission also pointed out that the economic feasibility of the project might be affected by future changes in the costs and benefits considered in the present evaluation and added that Governments might wish to consider the desirability of crediting the Tidal Project with certain public benefits not included in the Commission's determination of economic feasibility.

International (Contd.):

In determining the impact of the project upon the local economies of Maine and New Brunswick, the Commission found that industrial development would not be appreciably affected, although short-term benefits resulting from expenditures for goods and services might be expected. The Commission noted that the creation of two large salt-water lakes would provide additional facilities for recreation and that the tidal dams, locks, and gates could serve as foundations for an international highway connecting the present coastal highways in Maine and New Brunswick. The Commission recognized that the existence of a high pool in Passamaquoddy Bay might stimulate greater traffic to shipping points in the area. In the Commission's view, the project would not be detrimental to the region's important sardine industry and would have only a minor effect on other fisheries if appropriate remedial measures were undertaken.

Note: See Commercial Fisheries Review, June 1960 p. 68, May 1960 p. 36, March 1960 p. 38.

CENTRAL AMERICAN ECONOMIC INTEGRATION

TREATY COMES INTO FORCE:

According to officials of the Organization of Central American States (ODECA), the General Treaty of Central American Economic Intergration came into effect on June 3, 1961, eight days after Nicaragua deposited its ratification with ODECA.

1. General Treaty of Central American Economic Integration ratifications: Guatemala--May 5, 1961; El Salvador--May 8, 1961; Nicaragua--May 26, 1961. In force among the three countries.

2. Constitutive Agreement of the Central American Bank of Economic Integration ratifications: Guatemala--May 5, 1961; El Salvador--May 8, 1961; Honduras--May 5, 1961; Nicaragua--May 24, 1961. In force among the four countries.

3. Protocol to the Central American Agreement on Equalization of Import Charges (Second Protocol) ratifications: Guatemala--May 5, 1961; El Salvador--May 8, 1961; Nicaragua--May 26, 1961. In force among the three countries. (United States Embassy, San Salvador, June 9, 1961.)

LATIN AMERICAN FREE TRADE ZONE AND FREE TRADE ASSOCIATION

TREATY RATIFIED:

On May 2, 1961, representatives of Argentina, Brazil, Chile, Mexico, Peru, and Uruguay deposited in the Uruguayan Ministry of Foreign Relations, Instruments of Ratification of the Treaty of Montevideo, signed in that city February 18, 1960, which establishes the Latin American Free Trade Zone and the Latin American Free Trade Association. (United States Embassy, Lima, May 19, 1961.)

EUROPEAN FREE TRADE ASSOCIATION

REDUCTION OF DUTIES BETWEEN MEMBER COUNTRIES:

The British Government announced on June 2 an order on import duties which was scheduled to take effect on July 1, 1961, in accordance with the decision of the EFTA (European Free Trade Association) in February to reduce by a further 20 percent the duties on industrial products traded between the member countries.

Following the initial 10 percent reduction with which the EFTA group went into business in July 1960, this will mean that the EFTA countries will have cut their tariffs to 70 percent of the basic rates. This step is in accordance with the policy of the EFTA Seven to keep in step with the tariff reductions of the EEC (European Economic Community) Six: the latter group has also achieved a 30 percent reduction. (British Record, June 8 1961, issued by British Information Services.)

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FINLAND AND OUTER SEVEN COUNTRIES SIGN AGREEMENT OF ASSOCIATION:

Finland and the seven member countries of the European Free Trade Association (EFTA) have signed an agreement whereby Finland is to become associated with the EFTA.

All the countries are expected to ratify this agreement and deposit the proper instruments of acceptance before July 1, 1961. Assuming ratification, the first tariff reductions and the first relaxation of quantitative import restrictions between Finland and the EFTA countries will take place on that date.

Under the agreement Finland will reduce its duties toward EFTA member countries by

International (Contd.):

30 percent for most products and the member states of EFTA will extend to Finland the 20-percent reduction already made among the members as well as the further 10-percent reduction to be made on July 1, 1961. Finland also is accorded the same rights and assumes like obligations in the commercial and economic fields as the EFTA countries have among themselves.

The reduction and eventual abolition of tariff and other trade barriers between Finland and the members of EFTA are to take place, with a few exceptions, according to the time schedule established by the members of EFTA in the Stockholm Convention originally creating the European Free Trade Association.

Finland is authorized to reduce its duties on some goods competing with products manufactured by developing industries at a slower pace. The date of final elimination of the duties, however, will be the same as for other duties--January 1, 1970.

A significant part of Finland's foreign trade is regulated by bilateral trade agreements. To allow Finland to meet its commitments under these agreements, existing ing quantitative import restrictions may be maintained on a limited number of goods. Finland must, however, apply these restrictions in such a way that suppliers in the EFTA countries are given the opportunity of competing with other suppliers on fair and equal terms for a reasonable share of the Finnish market in these products.

Under the agreement between Finland and the EFTA countries, a new council, known as the Joint Council, will be established to deal with all matters pertaining to relations between Finland and the EFTA member states. The Joint Council will function independently from the EFTA Council; however, a considerable degree of coordination between the two bodies is expected.

The agreement of association was signed on March 27, 1961. (Foreign Commerce Weekly, May 15, 1961.)

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CONVENTION TO APPLY TO GREENLAND: The Danish Government, pursuant to provisions of the EFTA convention, has formally declared that the convention applies to Greenland effective July 1, 1961.

In view of Greenland's special economic, social, and demographic conditions, however, certain special arrangements have been accepted by the other EFTA member states. Benefits from an "equalization fund" for the purpose of stabilizing the income of Greenland producers and the right to establish and operate business concerns in Greenland will remain conditional upon Danish nationality and permanent residence in Greenland. Furthermore, Denmark retains its right to extend at any time before July 1, 1970, the Danish customs duties and quantitative import restrictions to Greenland, provided that such duties and restrictions are reduced and eliminated progressively in accordance with Articles 3, 10, and 11 of the EFTA convention. At present all imports are admitted into Greenland duty-free. (United States Embassy, June 15, 1961.)

GENERAL AGREEMENT ON TARIFFS AND TRADE

REPORT ON EIGHTEENTH SESSION OF THE CONTRACTING PARTIES: The Contracting Parties to the General Agreement on Tariffs and Trade (GATT) concluded their Eighteenth Session at Geneva on May 19, 1961. At this meeting, which began May 15, 43 countries participated. In addition a large number of newly-independent countries, which are in process of deciding on the question of their future participation in the Agreement, attended as observers.

Principal matters affecting the expansion of international trade discussed at the meeting were: Plans for a ministerial meeting to be held in late November; tariff negotiations, the second phase of which was scheduled to start on May 29; a new program for offering technical assistance in the commercial policy field to newly-independent countries; the new arrangements recently concluded in connection with Finland's association with the European Free Trade Association (EFTA); efforts to accelerate the removal of import restrictions; and the admission of Sierra Leone to the ranks of the Contracting Parties.

Finnish Association with EFTA: Finnish association with EFTA was supported by the United States. It will offer Finland scope for strengthening her economy and for developing traditional ties with her Scandinavian neighbors, as well as with other members of EFTA. The agreement bringing about this as-

International (Contd.):

sociation generally follows the lines of the Stockholm Convention, establishing the EFTA, and has been referred to a working party for further examination.

In presenting this agreement to the Contracting Parties, Finland drew attention, however, to a trade agreement concluded with the Soviet Union under which Finland will gradually extend free entry to Soviet goods, though like treatment is not to be extended to other countries outside the EFTA. It was generally agreed that this action conflicts directly with the most fundamental obligation of the General Agreement, namely the commitment to conduct commercial relations with one another on the general basis of equality of treatment, or non-discrimination. As concerns tariffs, this "most-favored-nation principle" means that, with certain exceptions including special arrangements which create thoroughgoing customs unions or free trade areas, the trade of each Contracting Party is to be treated no less favorably than that of any other country. The Fenno-Soviet agreement is a clear violation of this fundamental obligation, since Soviet goods will eventually enjoy tariff treatment far more favorable than goods of other countries.

The United States and other countries expressed serious concern with this deviation from the most-favored-nation principle, but took no immediate stand on what their ultimate attitude might be. It was agreed that the matter would be given further consideration at the Nineteenth Session.

Ministerial Meeting Arranged: The most important decision of the session was to convene next fall a meeting of officials in the trade policy field at the ministerial level. Over the past three years, the countries associated in the work of the General Agreement have been working on a program to attack three major problems within the field of governmental barriers to trade.

First, it is widely felt that tariffs remain an important obstacle to the expansion of trade. Second, the ministers will be expected to address themselves to ways of finding a coordinated approach to the problem of excessive tariff and non-tariff protection in agriculture. Preliminary work in this field indicates that both tariff and non-tariff barriers to agricultural trade have widely impaired benefits expected from the Agreement. Third, the time has come for policy-level attention to the problem of lowering barriers encountered by less-developed countries in the expansion of their international trade. Since, to a large extent, these three major problems are inter-connected, the ministerial meeting offers an opportunity for action on a broad front.

Technical Assistance for Newly-Independent Countries: A start was made at this session in affording newly-independent countries assistance in the development of sound trade policies. The Contracting Parties agreed that upon request from a newly-independent state, the Executive Secretary should take appropriate action to furnish qualified technicians or technical advice. This could mean undertaking to train officials and offering them the benefit of the Secretariat's experience in trade policy problems. Or, it could mean sending a mission to study a country's trade problems and submitting to it a comprehensive report with recommendations.

Action on Import Restrictions: Reports were made to the Contracting Parties on consultations which the United States initiated with Italy and France on their remaining import restrictions. The United States was able to express satisfaction with new liberalization steps to be taken shortly by Italy and hoped that additional action to eliminate quantitative import restrictions would be announced in the near future. In discussing the consultation with France, the United States observed that while it found encouragement in the relaxation of French import restrictions over the past six months, there was still much to be done in liberalizing imports of agricultural commodities.

Admission of Sierra Leone to the GATT: With the admission of Sierra Leone, the number of full Contracting Parties was raised to 39.

Discussion of External Tariff of EEC: There was considerable debate on the trade difficulties which some contracting parties, particularly the less-developed countries, believe will be created by the common external tariff of the European Economic Community and the trade advantage resulting from the association of the overseas territories with the EEC.

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International (Contd.):

SECOND PHASE OF CONFERENCE ON TARIFF NEGOTIATIONS:

In the second phase of tariff negotiations under the General Agreement on Tariffs and Trade, which began on May 29, 1961, the United States expects to negotiate for the reciprocal exchange of tariff concessions with the Commission of the European Economic Community (EEC) on behalf of the Member States (Belgium, France, Germany, Italy, Luxembourg, and the Netherlands) and with other countries which are contracting parties to the GATT or which are expected to negotiate for accession to the General Agreement.

During the first phase of the conference, which began on September 1, 1960, the United States, along with other GATT contracting parties, has been negotiating with the EEC Commission concerning the establishment of a new schedule of tariff concessions for the EEC as a whole to replace the present individual schedules of the member states. The United States has also been negotiating, under provisions of Article XXVIII of the GATT, with 15 other contracting parties concerning their modification or withdrawal of individual concessions in existing GATT schedules.

In accordance with the plan to increase participation by non-governmental representatives in the United States Delegation to the 1961 GATT tariff negotiations conference at Geneva, the Secretary of State has named 12 public advisers to serve as members of the delegation on a rotating basis in the second phase of the conference. This plan was developed by the United States cabinet-level Trade Policy Committee, which is chaired by the Secretary of Commerce.

JOINT UNITED STATES-JAPAN COMMITTEE ON TRADE AND ECONOMIC AFFAIRS FORMED

With an exchange of notes, Japan and the United States agreed to establish a Joint United States-Japan Committee on Trade and Economic Affairs. The Committee will consist: for the United States, Secretaries of State, the Treasury, the Interior, Agriculture, Commerce, and Labor; for Japan, Ministers for Foreign Affairs, Finance, Agriculture and Forestry, International Trade and Industry, and Labor, and the Director General of the Economic Planning Agency; together with such other officials of Cabinet rank as either Government may designate from time to time, as the need arises.

Among the Committee's functions shall be, in particular, to exchange information and views on matters which might adversely affect the continued expansion of mutually profitable trade on questions relating to the economic assistance programs of the two countries which require joint consideration; to report to the respective Governments on such discussions in order that consideration may be given to measures deemed appropriate and necessary to eliminate conflict in the international economic policies of the two countries, to provide for a fuller measure of economic collaboration, and to encourage the flow of trade. (U. S. Department of State news release of June 22, 1961.)

WHALING

CERTAIN NATIONS MEET TO DISCUSS DIVISION OF ANTARCTIC WHALE CATCH INTO NATIONAL QUOTAS:

Representatives of Japan, the Netherlands, Norway, and the United Kingdom met in Vancouver, B. C., Canada, April 19 to 21, 1961, to discuss a division of the Antarctic whale catch into national quotas. G. R. Clark of Ottawa, Chairman of the International Whaling Commission, headed the meeting. While Canada is not engaged in Antarctic whaling, it does have an interest in international cooperation in conservation measures for marine resources.

The U. S. S. R. is also a major whaling country and operates like the other four countries in the Antarctic. It shares the views of the other countries regarding the need for an allocation system and agreement had previously been reached on an allotment of the Antarctic catch for the Soviet Union. The U. S. S. R. was invited to the Vancouver conference but was unable to send a representative.

The four countries represented at the conference met to consider an allocation scheme between themselves. Progress was made and agreement was reached on the general framework within which an allocation system could be worked out. The details, including a number of practical problems, will be further considered between the Governments concerned and it was proposed to hold another meeting later in the year.

The meeting followed the pattern of a similar one held in England earlier in the

International (Contd.):

year where the parties could not agree on a division of the whales caught in the Antarctic.

Representatives of the Governments of Japan, Norway, the Netherlands, and the United Kingdom met again in London early in June to resume discussions on a division of the Antarctic pelagic whale catch into national quotas.

The Government of the U. S. S. R. was unable to accept an invitation to send an observer. A proposal has now been formulated which will be referred to the respective governments for urgent consideration. No further meeting is contemplated.

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PRICES FOR 1960/61 ANTARCTIC PRODUCTION TREND HIGHER:

As of late March or early April 1961, about 242,500 short tons of 1960/61 Antarctic whale oil production had been sold by the United Kingdom, the Netherlands, Japan, and Norway.

The bulk of the oil was sold to a large British firm, with the remainder going to several Norwegian hardening plants. The reported price was £10 10s. per metric ton (US$186.70 per short ton), an increase of £1 a metric ton ($2.54 per short ton) over the price reported a year ago.

According to estimates, these sales represented about 55 percent of total 1960/61 production. The Antarctic pelagic expeditions have accounted for about 85 percent of the whale oil produced in the last two seasons.

The entire 1960/61 Norwegian production of 11,574 short tons of sperm oil reportedly has been sold. (Foreign Crops and Markets, U. S. Department of Agriculture, April 10, 1961.)

Angola

FISHING INDUSTRY DEPRESSED IN 1960:

Despite increased production, the Angolan fishing industry was in the depths of a depression in 1960.

A number of steps were taken in 1960 to ease the situation, but the question remained whether the assistance would be helpful. The main step taken during the year was the formation in August 1960 of the Institute of Fishing Industries of Angola (Instituto das Industrias de Pesca de Angola). The Institute is to conduct scientific studies of the life cycles of fish, oversee the reorganization of the industry into a limited number of cooperatives (about ten), and assist in the marketing of Angolan fish products. A study made in 1959 estimated that the cost of modernizing plants, closing down some factories, and organizing the industry into cooperatives would cost US$6,817,000. The Institute also took over the operation of the Fund to Aid the Fishing Industry.

A map of present-day Africa.

Angola also joined the International Association of Fish Meal Manufacturers which is attempting to encourage the increased world consumption of fish meal and to help stabilize the world market price of fish meal. One objective of the Association was to gain the cooperation of Peruvian fish meal producers to aid in stabilizing the market. The prices dropped so low in mid-1960 that Angola started to grant subsidies to fish meal exporters as of July 1. The subsidies were US$15 per ton for machine-dried meal and US$10 per ton for sun-dried meal. The market price had risen sufficiently so that the subsidies were withdrawn on December 31, 1960.

Other stopgap measures were taken during the year. The fishing industry was not required to pay the sales tax on gas and oil, and the collection of all other taxes on the industry was suspended. Loans were made to the fish guilds at Mocamedes and Sa da Bandeira; and a credit was opened for US$1,048,000 to the Fund to Aid the Fishing Industry.

These actions failed to resolve the immediate difficulties and to get at the heart of the long-range problems; and as a result the industry's position became increasingly difficult. The economies of the main fishing centers were at a standstill. The only realistic solution of this is the complete reorganization of the industry to concentrate on producing more canned and frozen fish.

Angola (Contd.):

Angola's Exports of Fishery Products, 1959 and 1960

Product	1960		1959	
	Quantity	Value	Quantity	Value
	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000
Fish meal	45,085	3,754	51,228	7,188
Dried fish	13,165	2,561	13,965	2,653
Canned fish	1,123	621	1,342	745

Exports of fish meal in 1960 amounted to 45,085 metric tons (valued at US$3,754,000) as compared with 51,228 tons in 1959 valued at $7,188,000. Average prices per ton dropped from about $140 in 1959 to about $83 in 1960. Other exports of fishery products in 1960 and 1959 included small quantities of canned fish and fair quantities of dried fish. (United States Consulate, Luanda, April 21, 1961.)

Australia

HIGHER TARIFF RATES FOR CANNED TUNA IMPORTS RECOMMENDED:

At a public hearing on tariff rates for canned fish held in Melbourne on May 16, 1961, by the Australian Tax Commission, Australian tuna industry members strongly recommended that a higher tariff rate be placed on imports of canned tuna. Industry members claimed that tuna is found in abundance in the waters off Australia; that the Australian tuna industry is rather small but this was unavoidable due to the constant threat of cheap imports hanging over the industry; and that the domestic industry should be protected from cheap imports of canned tuna from Peru and Japan, which have been increasing the past few months.

The tuna industry asked that an ad valorem duty of 50 percent or a duty of one shilling six pence (about 16 U. S. cents) per pound (net weight) of canned tuna, whichever is higher, be placed on imports. (Suisan Tsushin, June 12, 1961.)

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FINFISH LANDINGS, FISCAL YEAR 1959/60:

Australia's 1959/60 (July 1959-June 1960) finfish catch of 78.1 million pounds increased nearly 3.7 million pounds from the previous year. Mullet was the leading species by weight, and comprised almost 16 percent of the total finfish landings. The bulk of the mullet catch consisted of sea mullet but included several other species commonly known to Australia's fishing industry as mullet.

Shark landings (mainly school and gummy) ranked second and made up about 11 percent of the national finfish catch. The 1959/60 Australian salmon (Arripis trutta) landings of 7.6 million pounds dropped 11 percent from the previous year and were displaced from second place by shark landings which increased by 11 percent during the same period. The greater part of the season's Australian salmon catch was from fishing grounds in Western Australia, New South Wales, and Victoria. Australian salmon accounted for almost 10 percent of the finfish catch.

Australian Marine and Fresh-Water Finfish Landings, Fiscal Years 1959/60 and 1958/59

Principal Species	1959/60	1958/59
	(1,000 Lbs.)	
Mullet	12,336	14,061
Shark	8,457	7,375
Australian salmon	7,601	8,544
Barracouta	5,871	4,301
Tuna:		
Southern bluefin	3,164	5,494
Northern bluefin	3,931	
Yellowfin	1	
Other fish	36,778	34,641
Total	78,139	74,416

The tuna catch of 7 million pounds was up 1.6 million pounds from the previous year and comprised over 9 percent of the total finfish catch. Landings of the two varieties fished in South Australia and New South Wales--southern bluefin (Thunnus thynnus maccoyi) and the northern bluefin (Kishinoella tonoggol)--were nearly equal.

The 1959/60 finfish catch was supplemented by shellfish landings of 36.8 million pounds, bringing the total Australian fish and shellfish catch for the year to 114.9 million pounds. The spiny lobster harvest of 28 million pounds accounted for 76 percent of the year's total shellfish landings. (Australian Fisheries Newsletter, March 1961.)

Belgium

FISH MEAL PRICES, MAY 1961:

Belgium fish-meal prices early in May 1961 were up sharply from a month earlier for both imported meal and domestic meal. Imported Meal: Peru, 65 percent protein, US$120 a metric ton or about $108.86 a short

Belgium (Contd.):

ton, c.&f. Antwerp (80-90 percent digestible). Domestic Whole Meal (fish solubles added): 62 percent protein minimum, $135 a metric ton or about $122.47 a short ton f.o.b. plant (93-94 percent digestible).

A special duty on imported fish meal of $40 a metric ton or $36.29 a short ton became effective on March 18, 1961. The effect of this duty has been to reduce fish meal imports drastically. However, it is believed that the Belgium fish meal importers as of May had large stocks of fish meal imported in the months preceding the decree. The importers are anticipating a change in the Government's attitude towards fish meal imports, the United States Consulate in Antwerp reported on May 15, 1961.

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FISH MEAL PRICES, JUNE 1961:

Belgium price quotations for fish meal of Peruvian origin as of early June 1961 showed a further increase as compared with the preceding month. A more appreciable rise occurred in the price of the Belgian fish meal but, as a result of the special import duty of $40.00 per metric ton ($36.29 a short ton) which has been levied since March 18, 1961, on foreign fish meal, the price of the local product was still lower than the Peruvian fish meal. Prices early in June this year were: Imported Meal: Peru, 65 percent protein, US$123.50 a metric ton or about $112.04 a short ton, c.&f. Antwerp (80-90 percent digestible). Domestic Whole Meal (fish solubles added): 62 percent protein minimum, $150.00-$160.00 a metric ton or about $136.08-$145.15 a short ton f.o.b. plant (93-94 percent digestible).

Due to the relatively high import duty, Belgian imports of fish meal, which rose sharply during 1960, have now declined to an extremely low level. Belgium importers of fish meal and manufacturers of feedstuffs prefer to adopt an expectant attitude in the hope that the Belgian Government will revise the decree on the special import duty. It is rumored that the Government contemplates reducing the import duty on fish meal from the present $40.00 per metric ton to $20.00 per metric ton ($18.14 a short ton), according to the United States Consulate in Antwerp, June 14, 1961.

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CONSUMPTION OF FISHERY PRODUCTS, 1960:

Belgium's apparent total consumption of fish and shellfish in 1960 remained about the same as during 1959. The principal demand was as usual for fresh groundfish which accounted for about 40 percent of total consumption of fishery products. There was an appreciable increase in the consumption of canned shellfish, but the total demand for canned fishery products remained relatively low because of the population's preference for fresh fish. The consumption of shrimp experienced a notable decrease, principally due to a substantial drop in total Belgian landings. (United States Consulate, Antwerp, May 10, 1961.)

Belgian Consumption of Fish and Shellfish, 1960

Species	Fresh	Prepared	Canned	Total
	(Metric Tons)			
Marine Finfish:				
Herring	1/9,808.6	10,804.4	383.5	20,996.5
Sprat	1/1,347.4	-	-	1,347.4
Mackerel	1/3,019.7	128.5	-	3,148.2
Pilchards	-	-	2,211.1	2,211.1
Sardines	-	-	4,021.4	4,021.4
Salmon	-	48.4	3,863.0	3,911.4
Other sea fish	2/45,479.3	369.3	4,826.3	50,674.9
Total marine fish	59,655.0	11,350.6	15,305.3	86,310.9
Shellfish:				
Shrimp	2/891.9	-	629.8	1,521.7
Lobster & crawfish	2/1,239.1	-	712.9	1,952.0
Mussels	2/22,094.2	-	-	22,094.2
Oysters	2/1,597.2	-	-	1,597.2
Other shellfish	2/876.1	-	1,045.2	1,921.3
Total shellfish	2/26,698.5	-	2,387.9	29,086.4
Total marine fish and shellfish	86,353.5	11,350.6	17,693.2	115,397.3

1/Used mostly for canning.
2/Used mostly for fresh consumption.
Note: Actual consumption figures are not available in Belgium. These statistics have been compiled on the basis of total landings plus imports minus exports for "fresh" fish and shellfish, and imports minus exports for prepared and canned fishery products.

Brazil

TUNA FISHING BY BRAZILIAN VESSELS:

The March 1961 issue of the Review (p. 46) contained a news item indicating that on December 20, 1960, the first tuna caught by a Brazilian vessel was landed at Santos. Actually, the article should have indicated this was the first large-scale venture. The Superintendencia do Desenvolvimento do Nordeste, an agency of the Brazilian Government, has written us that the information in the article cited above was not completely accurate.

Brazil (Contd.):

The Agency letter points out that Brazilian long-line tuna fishing, although on a small scale, has been conducted and developing around Recife for the past three years. Usually boats stay out from 6 to 10 days per trip.

Brazilian tuna fishermen sell their product locally. There are at present 8 boats (39 to 66 feet long) employed in tuna fishing, including 2 from Escola de Pesca Tamandare, a short distance south of Recife. One of the boats of this Government school has this year landed a trip of four 440-pound tuna among a total catch of almost 2 metric tons. Also, small sail boats fishing for tuna are traditional from the State of Rio Grande do Norte to Pernambuco.

The principal contribution to the Brazilian tuna market is the result, of course, of landings by two Japanese fishing companies operating from Recife and Santos, according to the letter.

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SAO PAULO FISHING INDUSTRY:

A total of 9 foreign and 225 domestic fishing vessels are registered at Santos, Sao Paulo. The vessels operate not only from the port of Santos, but also out of Ubatuba, Iguape, Registro, Itanhaem, Peruibe, and Sao Sebastiao.

A Japanese firm is the only foreign company in the State of Sao Paulo. The firm owns and operates a fleet of 8 trawlers and 1 purse-seiner. These vessels are modern and well equipped, and are equipped with motors of 300 to 500 hp. Their fishing trips, which range from northeast to south Brazil, last from 12 to 25 days. The Japanese firm's vessels fish mainly for tuna, "cod," "weakfish," and groupers.

The Japanese firm is one of the three Japanese fishing companies which were especially authorized by the Federal Government in 1957 to operate out of Brazilian ports with all-Japanese crews. As the Brazilian Fishing Code requires that two-thirds of the crews and all masters be Brazilian nationals, the Government authorization was valid for only two years. The authorization has since been renewed for another two years (ending during the second half of 1961).

Domestic vessels include: (1) A total of 57 "parelinha sol a sol"--small vessels of some 25 to 35 feet in length, made of hollowed logs, seating 8 to 10 fishermen, and using outboard motors of 25 to 80 hp. The parelinhas operate in pairs and drag a net between them. They fish mainly for sardines. They are used in coastal waters only. As their name indicates, they go out at dawn and return to port by sunset.

(2) A total of 39 purse-seiners, which are larger vessels, of 45 to 65 feet in length, usually with decks or half-decks, manned by a crew of 10 to 15 fishermen, and equipped with motors of 150 to 220 hp. The purse-seiners are generally out of port for 4 or 5 days.

(3) A total of 117 small trawlers, of about the same size as the purse-seiners; and 12 large trawlers, of 70 to 100 feet in length, manned by a crew of 15 to 20 fishermen, and equipped with motors of 250 to 450 hp.

The domestic vessels are 12 to 30 years old and their motors 8 to 10 years old.

The fish catch is broken down into three categories: Popular, special, first-class. Total fish production in Sao Paulo in 1960 was approximately 67 percent popular, 24 percent special, and 9 percent first-class. Popular species include sardines, dogfish, swordfish, catfish, mackerel, croakers, rays, and small groupers. Major special species are large dogfish, small shrimp, mullet, sea trout, and tuna. First-class species are large shrimp, prime shark cuts, spiny lobsters, "cod," "weakfish," dolphin (Coryphaena hippirus), large groupers, snooks, and jewfish.

The only fish processed on an industrial scale are sardines, which represent approximately 40 percent of the popular species of fish sold on the Sao Paulo consumer markets. Approximately 15 percent of the sardine catch is sold to 5 canning factories which sell their product on the Sao Paulo and Rio de Janeiro markets and in towns in the interior of the State, as well as in the States of Minas Gerais, Goias, Mato Grosso, and Parana.

Research work on the canning of "manjuba" (sand smelts), carried out jointly by the Sao Paulo and Federal Government at a pilot plant at Registro, is expected to lead to the industrialization of this species by the canning industry. So far, however, the project is still in its early stages and it may be some years before canning on a commercial scale is undertaken. (United States Consulate, Sao Paulo, May 12, 1961.)

British Guiana

WORLD BANK LOAN INCLUDES LENDING PROGRAM FOR FISHING INDUSTRY:

The World Bank, with the participation of two private banks, on June 23, 1961, made a loan equivalent to $1.25 million to British Guiana Credit Corporation with additional funds for its lending program for farming, forestry, animal husbandry, and fishing.

The British Guiana Credit Corporation is the only institution providing development credit for agriculture and industry in British Guiana. It was established in 1954 along general lines recommended by the General Survey Mission organized by the World Bank in 1953. Its purpose is to promote economic development through credits for agriculture, industry, forestry, fisheries, and rural and urban housing. Its capital is provided by the Government in the form of advances with no fixed repayment date.

Funds from the World Bank loan will be used for agricultural development credits and will provide the foreign exchange needed for imports. Credits will be made for the purchase of machinery to further mechanized farming; breeding stock; fencing and other materials and equipment for dairying and poultry farming; equipment and materials for the construction and improvement of rice mills and of plants processing other agricul-

British Guiana (Contd.):

tural products, for the expansion of logging operations and sawmills, and of marine and river fisheries.

The Bank loan is for a term of 8 years and bears interest of 5¾ percent annually including the 1-percent commission which is allocated to the Bank's Special Reserve. Amortization will begin November 1, 1963. The loan is guaranteed by the United Kingdom.

Canada

GOVERNMENT PROPOSES TO INCREASE ASSISTANCE FOR CONSTRUCTION OF FISHING VESSELS:

On May 12, 1961, the Canadian Government announced a program to assist in the modernization of its fishing fleet. A proposed capital subsidy of 50 percent of approved costs will be paid for those costs incurred after May 12, 1961, towards the construction in Canada of steel fishing trawlers where the new trawler will replace one old vessel, which will then be withdrawn from service. In addition, the present special assistance of up to $165 per gross ton payable toward the cost of construction in Canada of wooden fishing vessels over 45 feet in length will be increased to $250 per gross ton.

In the case of all vessels currently under construction, the new assistance will apply only to work which may actually be carried out from May 12, 1961, and not to construction work performed before that date. The methods of determining approved costs will be prescribed by regulations yet to be announced. The regulations will include the proportion of non-Canadian content to be included in costs eligible for subsidies. (United States Embassy, Ottawa, May 17, 1961.)

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LARGE TRAWLERS ON ATLANTIC COAST STILL RESTRICTED TO FISHING BEYOND TWELVE MILES:

Until zones have been designated off Canada's Maritime provinces where large Canadian fishing trawlers can operate to within the three-mile limit, they are still required to stay beyond 12 miles, the Canadian Fisheries Minister announced on June 2, 1961.

The amendments to the Canadian Fisheries Act (Bill C-86) passed the House of Commons, received the third reading in the Senate, and Royal Assent on June 1, 1961.

In clarifying the first major amendment to the Fisheries Act since 1932, the Minister pointed out that until the zones have been defined and published in the Canada Gazette, the large Canadian fishing vessels are still prohibited from fishing closer to shore than 12 miles. The Minister made it clear that the interests of local fishermen would be considered when certain zones are established allowing large trawlers to operate in areas between 3 and 12 miles from the coast of the Maritime or Atlantic Coast provinces.

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PRICES FOR BRITISH COLUMBIA HERRING OIL DELIVERED AT TORONTO, APRIL 1961:

The following prices for British Columbia herring oil delivered at Toronto, Canada, were furnished on June 2, 1961, by the United States Foreign Agricultural Service in Ottawa: In Canadian cents per pound: 1960: January 8.58; February 8.32; March 8.25; October, November, and December 8.93. 1961: January 9.07; February 9.57; March 9.67; and April 9.92.

The prices in April 1961 for British Columbia herring oil delivered at Toronto, Canada, amounted to 9.92 Canadian cents a

Working from boats in a circle, sardine fishermen of Black's Harbour, New Brunswick, Canada, take up the slack in the net to make it easier to brail out the fish.

Canada (Contd.):

pound as compared with the price of 9.67 cents in March this year. Since the start of the 1960/61 British Columbia herring fishing season, prices have advanced about 11.1 percent from the 8.93 cents a pound for sales made in October-December 1960 and were up close to 20.2 percent from the March 1960 price of 8.25 cents a pound. (United States Embassy, Ottawa, June 2, 1961.)

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NEW BRUNSWICK FISH MEAL PRICES, JUNE 1961:

Fish-meal prices (60-percent protein) quoted by New Brunswick producers early in June 1961 averaged about C$114 a short ton ($1.90 a protein unit) for both exports and domestic sales. Due to short supply and good demand, fish-meal prices have advanced steadily since May and as of early June were up about $12.00 a ton from the $102 a ton ($1.70 a protein unit) quoted by producers in mid-May this year. (United States Consulate, St. John, June 20, 1961.)

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NEW OCEAN RESEARCH VESSEL FOR NORTH PACIFIC:

Canada has awarded a contract for the construction of an ocean-going research vessel to operate in North Pacific waters to a British Columbia shipyard. To be named the G. B. Reed, after a former chairman of the Fisheries Research Board of Canada, the 177-foot vessel will be the newest addition to the fleet of the Board, the scientific arm of the Canadian Department of Fisheries.

The new vessel will cost C$1,786,817, and will be a sistership to the Board's deep-sea research vessel A. T. Cameron which was launched in May 1958, and operates in the Northwest Atlantic.

The G. B. Reed will be, in essence, a floating scientific laboratory and her facilities will incorporate the latest developments in fisheries research vessel design. She will have ample laboratory space and the most up-to-date equipment to enable scientists sailing on her to carry out all aspects of scientific research related to Canada's Pacific fish stocks. Such research programs are essential not only for the conservation and development of these fish stocks but also to meet Canada's commitments in high-seas investigation under the International North Pacific Fisheries Commission.

The vessel, the hull of which will be of welded steel construction, will be propelled by a single modern marine Diesel engine capable of a cruising speed of 12 knots. She will be able to cruise for 8,500 miles without refueling, and will carry a complement of 36, including scientists.

The G. B. Reed will be equipped for fisheries research purposes employing bottom and mid-water trawls, gill nets, long lines, and other specialized fishing gear as well as winches and rigging for conventional oceanographic survey operations.

Refrigerated holds and dry storage will be provided and will enable the vessel to remain at sea for a period of six weeks. Navigational equipment will include radar and echo-sounders. (Facts on Fish, May 1961.)

Curacao

NETHERLANDS APPROVES ESTABLISHMENT OF JAPANESE FISHING BASE:

The Netherlands Government has announced through its Embassy in Tokyo that a Japanese fishing company's plans to use Curacao in the Caribbean Sea for an overseas fishing base will be approved. The possibility of the plans materializing was strengthened with the prospects of the Japanese Fishery Agency giving permission for the establishment of the base.

The Netherlands Government is said to be welcoming the Japanese firm's plans that are in keeping with its policy of fostering new industries. The Netherlands side has concluded with the company an agreement to lease about 6 acres of land and begin the establishment of a large fishing base. The Japanese firm plans to store fish landed by Japanese tuna vessels fishing in the Atlantic and prepare the fish for export to the United States and Europe. At the same time, it will export for other producers and also buy tuna. By careful handling and storing of fresh fish, the firm hopes to prevent claim problems on exported tuna.

Some US$555,556 will be invested in the base, and to establish a cold-storage facility

Curacao (Contd.):

of 1,500 tons and a fish ham-fish sausage manufacturing plant of a small size to utilize the fish that are not suitable for export.

Yearly landings of some 10,000 metric tons and one-twentieth of the total tuna exports, including canned goods, will be the firm's production goal. Cristobal, Canal Zone, where Japanese tuna vessels dock at present, is too far from the fishing grounds, and while Curacao has 15-16 foreign vessels constantly at anchor, only a few ships are at Cristobal, making it difficult to load the fish for shipment when they are landed. Even on this score, Curacao has a promising future as an overseas fishing base with free access to carriers. (Fisheries Economic News, June 7, 1961.)

Czechoslovakia

JAPANESE FIRMS DELIVER FROZEN TUNA:

Two Japanese fishing companies planned to deliver a total of 1,050 metric tons of frozen tuna to Czechoslovakia. The announcement that Japan had concluded a frozen tuna trade agreement with Czechoslovakia was made in April 1961. One Japanese firm expected to deliver 600 metric tons of frozen tuna to Czechoslovakia in late June 1961. This shipment was to be transshipped from Monrovia, Liberia, by carrier vessel and delivered to Hamburg, Germany, and then shipped by rail to Prague, Czechoslovakia. The other Japanese firm expected to ship 450 metric tons of frozen tuna to Czechoslovakia in late July. This shipment was to be hauled directly to Hamburg by fishing vessels. A Japanese trading corporation located in Hamburg was to handle both transactions.

Negotiations for future deliveries of frozen tuna are reported to be under way, although Czechoslovakia will not commit herself to any future purchase until she has examined the above-mentioned shipments. Should they prove satisfactory, Czechoslovakia has indicated that she may stop importing frozen tuna from Norway (present imports from Norway are given as 4,000 to 5,000 tons) and shall purchase tuna from Japan instead. According to an official of one of the Japanese firms, his firm has accepted malt in exchange for the frozen tuna. (Suisan Keizai Shimbun, May 31, 1961.)

Denmark

FISH FILLETS AND BLOCKS AND FISHERY BYPRODUCTS EXPORTS, MARCH 1961:

Denmark's exports of fresh and frozen fish fillets and blocks during March 1961 amounted to 7.7 million pounds, an increase of 2.5 million pounds as compared with March 1960 exports. Of this total, 2.7 million pounds (principally frozen cod fillets and blocks) were shipped to the United States.

In the first quarter of 1961, Denmark shipped slightly over 4.4 million pounds of frozen fish fillets and blocks (almost entirely cod and related species) to the United States.

Total exports of fresh and frozen fillets and blocks from Denmark in the first 3 months of 1961 totaled 19.1 million pounds, or 8 million pounds more than the comparable period in 1960. Exports of fillets and blocks of cod and related species during the first three months of 1961 were up 50 percent, and flounder and sole increased 55 percent as compared to the same period in 1960. Nearly 3 million pounds of herring fillets were exported in the first three months of 1961, compared with only a small quantity in the first three months of 1960.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks, and Fishery Byproducts, January-March 1961

Product	March 1961	March 1960	January-March 1961	January-March 1960
	(1,000 Lbs.)			
Fillets and blocks:				
Cod and related species	4,956	3,856	11,312	7,556
Flounder and sole	1,739	1,265	4,772	3,082
Herring	912	-	2,774	-
Other	102	1/ 98	238	1/381
Total	7,709	5,219	19,096	11,019
	(Short Tons)			
Byproducts:				
Fish meal, fish solubles, and similar products	4,741	2,096	9,923	6,768

1/Includes herring fillets.
Note: Shipments from the Faroe Islands and Greenland direct to foreign countries not included.

In March 1961, Denmark's exports of 4,741 tons of fish meal, fish solubles, and similar products were more than double the quantity shipped in March 1960. Exports of fishery byproducts for the first quarter of 1961 were 47 percent more than in the comparable period of 1960.

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FISH MEAL AND SOLUBLES PRICES, MAY 1-6, 1961:

During the week ending May 6, 1961, export prices for Danish herring meal were quoted at 850-960 kroner a metric ton (US$111.81-126.28 a short ton) f.o.b. Esbjerg. Demand for Danish herring meal has been in-

Denmark (Contd.):

creasing, due mainly to the failure of the Norwegian winter herring fishery.

Light sales of fish solubles averaged only 490 kroner a metric ton ($64.46 a short ton). This price represents a substantial decrease from an early April price of about $94.06 a short ton. (United States Embassy, Copenhagen, May 23, 1961.)

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FISH MEAL PLANTS WIDELY DISTRIBUTED:

A Danish manufacturer in Esbjerg has delivered 24 complete fish meal plants, Dansk Fiskeritidende (a fishery trade periodical) reported on May 19, 1961. Eleven are in operation in Europe, 5 in Africa, 2 in Turkey, 3 in the Far East, 1 in Mexico, and 2 in South America. The most recent orders are for 2 plants for the Philippines and 1 for Nigeria. The cost per plant is about 250,000 Danish kroner (US$36,100).

A Copenhagen manufacturer has made five fish meal plants for Japan. They are to be installed in factoryships and will utilize the catch of 25 small trawlers.

East Africa

STUDY OF ROCK COD SPECIES:

The 35 species of rock cod in the Indian Ocean off Kenya and Tanganyika are being studied by the senior scientific officer of the East African Marine Fisheries Research Organization at Zanzibar.

The purpose of the study is to identify the rock cods, Serranidae. Along the East African coast some 35 varieties are caught and sold in the local markets. The fish average 20 to 40 pounds each.

The job is to identify the commercially important species, and because so far no one knows just what they are, he catches them from the Research Organization's vessel Manihine, and then in the laboratory examines them to see what they have been feeding on and their breeding condition.

The study in March 1961 was focused on the fishing potential of the North Kenya Banks, which are about 40 miles long and 30 miles wide, with a steep valley separating the southwest part, and probably composed of alluvial soil swept from the Tana River centuries ago. They may prove to be a very valuable and quite new source of fish food for Africa. (The African Shipping News and Fishing Industry Review, April 1961.)

Ecuador

BAIT FISHING BY FOREIGN VESSELS PROHIBITED:

A law prohibiting foreign vessels from bait fishing off the coast of Ecuador was signed by the President of Ecuador in May 1961 and will enter into effect when published in the Registro Oficial. Bait fishing is prohibited between Point Santa Elena, Guayas Province, and Cape Pasado, Manabi Province.

An official of the Department of Fisheries, Ministry of Development, has explained that no distance into the ocean was mentioned in the law since bait fishing is done within "about three miles" of shore and, therefore, allegedly does not involve the problem of territorial waters.

France

MULTIPURPOSE SIXTY-FOOT FISHING VESSEL:

The sardine purse-seine fishery of Lorient, France, has found increasing difficulty in obtaining a full crew for its vessels during the summer season when a 60-foot vessel normally carries a crew of 13-14 men. When the season is over, the boats fit out for trawling or shellfish dredging with a crew of 6-7.

In an effort to overcome this problem, one French company has introduced a new design, which utilizes a "power block" to haul the sardine nets, and so cut crew requirements by half. Two of these new vessels, which are 52 ft. 9 in. in length, were to go into service in May 1961. These represent the first of six.

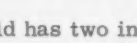
The new vessels are built of steel instead of the traditional wood, have a crew of 7 men,

France (Contd.):

and can make 6-day trips. A trawl winch, mounted aft of the forward-placed wheelhouse, carries over 300 fathoms of warp. Starboard gallows are fitted for trawling and other gallows on the port quarter can be used for dredging.

The fish hold has two insulated tanks of refrigerated sea water with a total capacity of 424 cubic feet. One of these could, it is suggested, be used as a live-bait container for tuna fishing by cutting out the cooling system. The refrigerator compressor is powered by the main engine, which will be of 180 hp., or two engines of 80-90 hp. driving through a common gearbox.

The use of refrigeration is a new concept for this fishery. Present vessels return to port each day, regardless of their catch. On the new vessels, the fish will be placed in perforated aluminum containers before being stored in the tanks; the total capacity will be 4 metric tons of fish. (World Fishing, May 1961.)



French Guiana

EXPANSION OF FISHING INDUSTRY PLANNED:

An economic plan ("Plan de Development Economique de la Guyane Francaise") published last year, includes plans for expanding the fishing industry of French Guiana.

The coast off of French Guiana is rich in untapped fish and shrimp resources. However, the fishing industry is primitive and unorganized. French Guiana imports about $90,000 worth of fish. To reduce this drain on the country's economy and to realize the export potential of the shrimp and fish, the Plan proposes the modernization of the domestic fishing industry and the encouragement of heavy private capital investments for large-scale exploitations. (United States Consulate, Martinique, May 24, 1961.)

Gabon

FISH RESOURCES OFF COAST REPORTED TO BE PLENTIFUL:

According to reports, fish are plentiful off the coast of Gabon (formerly part of French equatorial Africa), and the area is fished by a number of Gabonese and Dahomey natives. However, thus far the fishing, with one exception, has been for the domestic market. The one exception is a Franco-Norwegian whaling company, operating off the coast of Gabon.

The processing of whales is done at the company's facilities near Port-Gentil. This Company began operations in 1949 and captured 4,000 whales in its first three seasons. In 1952, the whales disappeared, and the company was forced to suspend operations. In 1959, the Government renewed the Company's permit for one year and authorized the company to take 600 whales. The factory near Port-Gentil resumed operation but, only 178 whales were taken during the entire year. With the decline of the whaling industry, oceanographic research is being conducted with the hope that additional commercial fishing possibilities may eventually be found. (United States Embassy, Libreville, May 15, 1961.)

German Federal Republic

NEW STERN-TYPE FACTORYSHIP TRAWLER RETURNS WITH RECORD TRIP:

The new West German stern-type factoryship trawler Henrich Kern, 1,244 gross tons, returned from its maiden 37-day trip to West Greenland's cod banks with a record catch, according to the May 12, 1961, issue of Dansk Fiskeritidende, a Danish fishery periodical. It caught 900 metric tons of fish, of which 600 tons were processed on board into 220 metric tons of frozen fillets worth 300,000 marks (about US$75,000).

In addition, the trawler landed 4,250 boxes (50 kilos or 110 pounds each) of iced fish (mostly cod) at the auction, plus 1,410 sacks of fish meal and 110 barrels of fish oil.

The skipper reported that the trawler fished for some time in below zero weather off Greenland and in the beginning was in the company of 10 British and German trawlers.

German Federal Republic (Contd.):

A great advantage for the Henrich Kern was that the catch immediately could be sent below deck for processing.

Every half hour the trawl was hauled in with a catch of 10 to 15 metric tons (22,000-33,000 pounds) of cod, so that soon the crew and filleting equipment could not keep up with the catch. Thereafter, the trawler drifted for 12 to 14 hours without fishing while two watches worked on the catches. During the end of the trip, the hold was filled with 215 tons of round fish in a period of four days and six hours.

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DIRECT LANDINGS BY SWEDISH FISHERMEN REGULATED:

At a meeting some time ago between Swedish and German fishery representatives in Hamburg, the Germans requested that direct landings of herring by Swedish fishermen be limited to fixed quantities in order to protect the price structure.

The Swedish fishery representatives said they were unable to comply with the request as stated, but that they could through a system whereby Swedish fishermen receive directives as to which German port to proceed to for direct landings be able in the future to prevent boats from landing herring in places where the demand had already been met. These directives are issued by the Vastkustfiskarnas Fiskforadling (West Coast Fishermen's Fish Processing) organization in Goteborg. They are the result of an agreement reached with Swedish west coast trawler owners whereby the Swedish boat teams give the West Coast Fishermen's Fish Processing organization at least 36-hour notice of their intended landing port.

West Germany in late years has become a very important sales area for Swedish-caught North Sea herring. Cuxhaven is the direct landing goal for most of the Swedish fishermen, although landings are also made in Hamburg and Bremen. (United States Consulate, Goteborg, May 16, 1961.)

Ghana

SEINERS AND TRAWLERS ORDERED FROM GREAT BRITAIN:

The Government of Ghana has signed in Accra a contract for £1 million (US$2.8 million) worth of seiners and trawlers to be built in British shipyards. Six vessels are to be built--four tuna purse-seiners and two stern trawlers.

The contract is scheduled to be completed by April 1962, all vessels being constructed on the hydroconic hull design after some months of research and test by a British firm in consultation with the Ghana Fisheries Department.

A British shipyard firm has agreed to train in Britain a selected number of Ghanaians in the steel shipbuilding industry during the period of construction of the new fishing vessels. The trained personnel will, on their return to Ghana, form the nucleus of the repair and maintenance staff for the vessels in operation.

The tuna purse-seiners will consist of single-screw vessels, approximately 130 feet over-all, each propelled by a single Diesel engine of about 1,000 hp. with accommodations for a crew of 18, including four single berth cabins for officers and a spare two-berth cabin for scientists, marine biologists, etc., who may accompany the vessel for research work. Refrigeration machinery will be manufactured in Denmark, and the electrical generators will supply 440 v., 3 phase, 50 cycles, a. c. power throughout, with suitable connections for shore supply to maintain refrigeration, etc., when in port. The tuna purse-seiners' equipment will be of United States design.

The stern-trawlers will be of similar dimensions and power but with the Unigan stern-gantry arrangement. Many features are being embodied for the handling and treatment of the catches, including a large blast-freezing plant.

Both the seiners and trawlers will have fuel capacity to undertake long voyages at comparatively high speeds. In the case of the stern-trawlers, provision is made for alternate types of fishing to take advantage of the abundance of fish which occurs in African coastal waters at certain times of the year. Up-to-date navigational and fishing aids will be provided.

Ghana (Contd.):

The first two vessels to be completed are expected to commence fishing early in November 1961.

The vessels are intended to form the nucleus of a state-owned fishing fleet. (The Fishing News, May 12, 1961.)

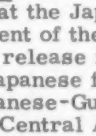
Guatemala

JOINT JAPANESE-GUATEMALAN SHRIMP FISHING COMPANY PLANNED:

A large Japanese exporting firm (major tuna exporting company) hopes to establish a joint shrimp fishing company in Guatemala. The firm plans to send a fishing vessel to the Caribbean Sea off Guatemala in August or September 1961 to conduct exploratory fishing for shrimp for two months. Should this operation be successful, the firm will then proceed with its plans to establish a joint firm, contributing 39 percent of the capital outlay, and construct an ice plant and a 300-ton capacity cold-storage plant.

According to available information, the Guatemalan fishermen employ small fishing boats with 2- to 3-men crews, and catch an average of 827 pounds of shrimp per vessel per day. The local fishing boats make about 15 trips a month and land about US$2,500 worth of shrimp monthly. (Nippon Suisan Shimbun, May 29, 1961.)

Editor's Note: One other Japanese trade paper states that the Japanese firm will contribute 49 percent of the capital. On February 18, a news release in The Suisan Tsushin reported two Japanese firms were planning to set up a Japanese-Guatemalan firm to fish for shrimp off Central America. The report had indicated the company was to start operating in April-May 1961, but no more has been heard about this venture.



Iceland

NEW TWELVE-MILE FISHING LIMITS REGULATIONS ISSUED:

Government on March 11, 1961, issued regulations relating to fishing (principally trawling) in waters off Iceland. The regulations are applicable both to foreign and Icelandic vessels.

The new regulations are complicated, but the basic points are:

(1) By drawing new base lines, the old fishery limits have been pushed seaward to include an area embracing 5,065 square kilometers of fishing grounds on which trawling is barred.

(2) No trawling operations are permitted by vessels of any nation within the new closed areas.

(3) Within the old 12-mile fishing limits zone around Iceland, Icelandic trawlers can continue the trawling operations they were permitted under previous trawling regulations, the most recent being those of August 29, 1958.

(4) The British obtained concessions to trawl in certain pockets within the old 12-mile Icelandic fishing limits. Under the new March 11, 1961, regulations, Icelandic trawlers are likewise permitted to trawl in those areas made available to British vessels. Like the British, the Icelanders can only trawl in these pockets during specified times of the year over the next three years.

Therefore, Icelandic trawlers have been given all concessions for trawling within the 12-mile zone during the next three years which the British trawlers obtained from the fishery settlement. Icelandic trawlers retained the rights they previously had for trawling at certain places and times within the old 12-mile zone, but like all other trawlers, they are barred from the new protected areas formed by pushing the base lines seaward.

The Icelandic trawlers will have a smaller area open to them after the three years are up than before the British settlement, providing the regulations remain the same. Even during the next three years they will be in a less favorable position than before because the new barred zones contain some of the best fishing areas off Iceland.

Vessels of all other nations--those particularly concerned being Belgian and West German--are also barred from fishing within the new 12-mile fishing limits.

The chief beneficiaries of the new regulations will be the smaller non-trawling Ice-

Iceland (Contd.):

landic fishing vessels, as all trawling has been prohibited within the rich base areas off the southwest coast of Iceland. Only they will be allowed to fish those areas. (United States Embassy, Reykjavik, April 17, 1961.)

Note: Also see Commercial Fisheries Review, May 1961 p. 48.

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ICELAND'S FISH PRODUCTION, JANUARY-FEBRUARY 1961:

How Utilized	January-February	
	1961	1960
	(Metric Tons)	
Herring 1/ for:		
Oil and meal	5,437	135
Freezing	4,860	125
Salting	2,383	78
Fresh on ice landed abroad	2,470	562
Other fish (cod, etc. 2/) for:		
Fresh on ice landed abroad	5,065	5,342
Freezing and filleting	3/18,818	33,133
Canning	3/30	-
Salting	6,699	10,282
Stockfish	4,597	7,251
Home consumption	1,211	1,487
Oil and meal	504	591
Total production	52,074	58,986

1/Whole fish.
2/Drawn fish.
3/Also includes shrimp--14 tons for freezing, and 30 tons for canning in 1961.

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FISHERY TRENDS, MAY 1961:

Although the main fishing season officially ended May 11, 1961, a number of Icelandic trawlers recently sailed for fishing grounds off Greenland. The herring fishery continued sporadically, encouraged by higher fish meal and oil prices. New shrimp grounds were discovered off the northwest tip of Iceland.

Fishing was almost entirely for Western markets since no agreement has been reached on ocean perch sales to the Soviet Union. A reason for the departure of the trawlers to Greenland waters was to put them out of reach of impending strike action at home. A full assessment of the main fishing season has still to be made, but it was obviously less profitable than that of 1960 and left a number of localities, particularly the Westman Islands, in a worse position than last year.

Despite the large number of ocean perch to be caught off the coast of Newfoundland, the Freezing Plants Corporation stopped processing these fish in May and ordered the trawlers to stop the ocean perch fishery until a 1961 sales contract was made with the Soviet Union. On May 11, the daily Morgunbladid (Conservative Party) stated that the price for frozen perch should rise to compensate for the decline in prices of fish meal.

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PRODUCTION OF PROCESSED FISHERY PRODUCTS, 1959-60:

Iceland's production of processed fishery products and byproducts in 1960 amounted to 236,600 metric tons (521.6 million pounds), valued at $55.5 million. As compared with 1959, this represented a decrease of 9 percent on the basis of weight with a drop in value of $10.8 million. The value of frozen and cured fishery products was lower than the previous year. The more pronounced decline in value was for fishery byproducts with a drop of nearly $8 million from the previous year. The world market for fish meal and oil was depressed in 1960, and affected prices for Icelandic fishery byproducts. (See table on following page.)

Less fish was frozen in 1960 than the previous year. This was partly due to a shortage of fish which confronted the Icelandic trawler industry late in 1959, and which became gradually worse in 1960. Frozen fillet production was lower by 13 percent, and the amount of herring frozen was 40 percent less than in 1959. More fish waste, mainly used for animal feeding, was frozen in 1960 than the previous year.

Iceland's 1960 cured fish production declined 11 percent when compared with 1959 principally due to the lower output of salted herring. The drop in salted herring production was mainly due to the larger proportion of lean and inferior quality herring which was processed into meal and oil. Stockfish production in 1960 was up about 40 percent from the previous year with a value increase of $1.7 million.

The 1960 Icelandic fish meal and oil production was 16 percent less than the previous year. Less meal was processed from herring, ocean perch, and fish fillet trimmings and waste than in 1959.

Fish on ice landed abroad (United Kingdom and West Germany) directly by Icelandic vessels in 1960 amounted to 27,800 metric tons valued at $2.9 million. This was

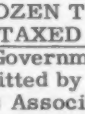
Iceland (Contd.):

Icelandic Production of Processed Fishery Products and Byproducts, 1959-60

Product	Quantity		Value			
	1960	1959	1960		1959	
	(1,000 Metric Tons)		Million Kronur	US$1,000	Million Kronur	US$1,000
Frozen						
Fillets	58.8	67.9	851.7	22,413	935.7	24,624
Fish waste	10.8	2.4	17.1	450	4.4	116
Herring	8.8	14.7	46.4	1,221	74.6	1,963
Fish roe	0.7	1.2	8.3	218	15.1	397
Shrimp	0.1	0.1	} 35.9	} 945	} 14.7	} 387
Lobster	0.3	0.1				
Other	0.1	0.3	0.1	3	3.7	97
Total Frozen	79.6	86.7	959.5	25,250	1,048.2	27,584
Cured						
Salt fish, wet	22.7	19.0	205.3	5,403	171.0	4,500
Salt fish, dried	5.5	7.3	97.2	2,558	108.1	2,845
Stockfish	9.4	6.6	213.8	5,626	149.6	3,937
Herring	25.7	33.8	199.3	5,245	283.6	7,463
Fish roe	0.4	4.6	3.1	82	35.2	926
Other	0.2	0.5	2.2	58	3.5	92
Total Cured	63.9	71.8	720.9	18,972	751.0	19,763
Canned						
Unclass. (includes shrimp)	2/0.5	3/0.3	2/21.3	2/561	3/21.7	571
Byproducts						
Meal:						
Herring	19.5	22.1	75.5	1,987	141.7	3,729
Ocean perch	10.1	16.9	33.0	868	95.8	2,521
Wolffish	0.5	1/	1.6	42	-	-
Lobster	0.2	1/	0.1	3	-	-
Liver	0.4	1/	2.4	63	-	-
Other	22.9	25.9	79.7	2,097	168.5	4,434
Oil	31.0	36.7	169.3	4,455	251.7	6,624
Solubles (50% solids)	1.2	-	2.0	53	-	-
Total Byproducts	85.8	101.6	363.6	9,568	657.7	17,308
Miscellaneous:						
Fish skins	0.1	1/	0.2	5	-	-
Whale products	6.7	1/	43.3	1,139	40.0	1,053
Total Miscellaneous	6.8	-	43.5	1,144	40.0	1,053
Grand Total	236.6	260.4	2,108.8	55,495	2,518.6	66,279
Fish landed abroad	27.8	13.8	108.8	2,863	61.5	1,618
Home consumption	17.0	1/	45.0	1,184	58.3	1,534

1/Not shown.
2/Mostly unclass., includes 60 tons canned shrimp valued at US$135,600.
3/Canned shrimp data not shown separately.
Note: Values converted at rate of 38 kronur equals US$1.00 in 1959 and 1960.

double the quantity landed abroad the previous year and the value was up $1.2 million.



Italy

JAPANESE FROZEN TUNA IMPORTS WILL NOT BE TAXED UNTIL 1971:

The Italian Government, in response to questions submitted by the Japanese Frozen Food Exporters Association, announced that Italy will not tax imports of Japanese frozen tuna until 1971. The announcement did not clarify what the Italian Government intends to do after 1971. The Italian Government also stated that in the future it will cooperate with the Japanese Government on matters pertaining to the import of frozen tuna to Italy. This message was relayed to Japan through the Italian Embassy in Tokyo. (Shin Suisan Shimbun, May 22, 1961.)

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PRODUCTION OF MARINE FISH AND SHELLFISH, 1953-60:

Italy's landings of marine fish and shellfish in 1960 amounted to 188,100 metric tons (414.7 million pounds). This was only slightly below the 1959 landings, and held at about the same average as during the years 1953-59. The 1960 finfish catch accounted for 78 percent of the total landings for that year while shellfish (molluscs and crustaceans) accounted for the remainder. The sardine and mackerel harvest in 1960 comprised 40 percent of the total fish landings. Tuna and tunalike landings (not including those landed direct by foreign fishing craft or reefer ships) in 1960 amounted to 1,393 tons, substantially less than the 2,064 tons landed in 1959.

Italy (Contd.):

Italy's Landings of Marine Fishery Products, 1953-1960

Year	Fish: Total	Fish: Sardines, Anchovies, & Mackerel	Molluscs	Crustaceans	Grand Total1/
	(1,000 Metric Tons)				
1960	146.0	58.3	33.1	9.0	188.1
1959	143.9	61.2	37.1	8.5	189.5
1958	141.8	60.4	35.9	8.2	185.9
1957	146.7	67.1	32.4	7.6	186.7
1956	157.2	75.9	31.6	6.5	195.3
1955	155.2	67.6	32.8	6.8	194.8
1954	159.8	69.3	28.2	6.6	194.6
1953	160.6	69.1	22.5	6.0	189.1

1/Does not include sponge production; and quantities landed by Italian fishing craft in foreign ports and quantities landed by foreign fishing craft in Italian ports.

The 1960 total finfish landings of 146,000 tons did not change greatly since 1957, but were 10 percent less than the 1953 finfish catch. The mollusc catch in 1960 dropped 10 percent from the previous year but exceeded production for each of the years 1953 through 1957. (United States Embassy, Rome, June 1961.)

Japan

EXPORT TARGETS FOR FISHERY PRODUCTS FOR 1961:

Japanese export targets for fishery products during 1961 were approved at a meeting of the Agricultural-Fisheries Product Export Council held by the Ministry of International Trade and Industry (MITI). Approved programs are to be submitted to the Highest Export Council.

The value of 1961 export targets for fishery and aquatic products other than canned amounts to US$78,340,000; for all types of canned products (including fish and shellfish) $140,930,000; and for whale oil $21,865,000. Compared with 1960, the export target for fishery products other than canned is up $6,650,000, for all canned products it is up $3,635,000, but for whale oil it is down $1,570,000.

In order to achieve the targets, the Government is requested by the Council to consider the (1) establishment of bases on the Atlantic coast for frozen tuna, (2) a publicity program in overseas markets for cultured pearls, (3) accelerate imports of scallops and kelp from the Soviet Union, and (4) orderly measures for agar-agar imports from Korea for export.

The 1961 export targets for fishery and aquatic products other than canned are: frozen tuna $36,300,000, frozen broadbill swordfish $5,250,000, cultured pearls $27,270,000, agar-agar $1,200,000, dried cuttlefish $2,640,000, kelp $840,000, scallops $750,000, and salted and dried fish $2,250,000. For canned fishery products the targets are: tuna $26,732,000, salmon and trout $54,145,000, crab meat $11,821,000, sardines $6,220,000, mackerel-pike $4,803,000, and horse-mackerel $3,608,000. For whale oil the target is $21,865,000.

With regard to frozen tuna, the Council asks bases be established in the Atlantic; also provide financing to adjust demand and supply. For cultured pearls, the Council asks for a study of overseas markets, strengthening of publicity activities, together with an effort to obtain long-term financing for production. For salted dried products, the Council suggest that dried cuttlefish be imported from Korea, using similar procedures as for agar-agar, for the purpose of re-export. Government's appropriate guidance is wanted for full execution of the Japan-Taiwan Trading Agreement as to its trading plans. Consideration is requested for import of Russian scallops and kelp in view of domestic demand.

On canned products, the Council asks for counter-measures to import restriction and advancing import tariffs in the United States; Government subsidy for continued publicity to stimulate demand and exhibitions overseas; ask for a change in United States import quota on canned tuna-in-brine to a country-by-country quota based on previous import records; request increases in import quotas of canned sardines and mackerel-pike by Southeast Asiatic countries, but particularly, Burma, Indonesia, and Egypt; continue trading on the basis of letter of credit; and reduce the price of tinplate for manufacturing cans to the international price level.

Also, in order to compete favorably in the international market on whale oil, an effort should be made to improve redemption ratio on vessels, lower interest, and to secure markets for steady and permanent exports. (Suisan Keizai Shimbun, June 2, 1961.)

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FISHERY AND MARINE PRODUCTS EXPORTS TO UNITED STATES DECLINE IN 1960:

The bulk of Japanese exports of fishery and marine products to the United States in 1959-1960 was made up of fresh or frozen

Japan (Contd.):

Japan's Exports of Selected Fishery and Marine Products to the United States, 1959-60

Item	1960		1959	
	Quantity	Value	Quantity	Value
	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000
Tuna, fresh or frozen	64,924	18,977	65,482	19,479
Tuna, canned	9,651	9,473	9,905	10,493
Crab meat, canned	1,941	5,359	3,114	7,542
Other canned fish	17,737	14,035	29,549	23,839
Oils from fish and marine animals	1,891	2,124	1,661	1,911
Pearls, worked	1/	12,753	1/	11,759

1/Not available.

tuna. But exports of that commodity decreased from 65,482 metric tons valued at US$19.5 million in 1959 to 64,924 tons valued at US$19.0 million in 1960. Exports of canned tuna were also off slightly. The greatest decline, however, was in the exports of other canned fish which dropped from 29,549 tons valued at US$23.8 million in 1959 to 17,737 tons valued at US$14.0 million in 1960 (see table). (United States Embassy, Tokyo, May 22, 1961.)

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JAPANESE FEEL TUNA FISHERY MAY EVENTUALLY BE REGULATED INTERNATIONALLY:

The feeling is spreading in Japan that there will come a time in the future when the tuna fishery will be regulated on an international basis, like the salmon, bottomfish, and whale fisheries. This feeling is supported by the fact that many more countries are now engaged in tuna fishing or are interested in engaging in tuna fishing, and the fact that the Inter-American Tropical Tuna Commission, which had been established to study the tuna resource in the Eastern Pacific, is now reported to be favoring the enactment of regulations to control the Eastern Pacific tuna fishery.

The Japanese National Federation of Tuna Fisheries Cooperative Associations is concerned over what appears to be a growing trend in the world to establish regulations to control the tuna fishery and hopes to have this matter fully explored by the National Tuna Research Council. The Federation hopes to have the Council analyze trends and developments in other countries, as well as conditions of the tuna resource throughout the world, for the purpose of clarifying Japan's position in regards to the establishment of international agreements to control the tuna fishery. (Suisan Keizai Shimbun, June 16, 1961.)

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SUMMER ALBACORE TUNA FISHING OFF JAPAN:

Fishing conditions in this year's summer albacore tuna fishery off Japan in mid-May were reported promising as compared with the past three years. Landings of small albacore were becoming heavy as in 1956, a bumper catch year. However, the decline in the number of vessels fishing--about 30 percent less than last year--is expected to adversely affect the season's catch. At last year's peak, 280 vessels were fishing, and this year a little more than 200 vessels are expected to operate.

The fishing ground as of mid-May was located at 137°-144° E. longitude, 28°-30° N. latitude in the sea area south of the Kii Peninsula. Some 100 vessels were fishing the area. Fish weighing 13-15 pounds (considered to be extremely small) and medium 37-39 pound fish were mixed in the catches. Ex-vessel prices were down around $276 per ton because of lack of enthusiasm on the part of the canners. Bait, which was scarce last year, is abundant this season. (Suisan Tsushin, May 15, 1961.)

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ALBACORE TUNA FISHING REPORTED POOR:

Early in June albacore fishing off Japan was reported very poor. As of June 10, 1961, albacore landings at the two major Japanese ports of Yaizu and Shimizu totaled 8,086 short tons. This was about 60 percent of the production of 13,282 short tons for the same period last year.

The price of albacore gradually rose since the start of the season and on June 10 the price of albacore (28-pound size) was 128 to 131 yen per kilogram (US$322 to $330 a short ton), with practically all fish being used for canning. In mid-May, albacore sold for 110 yen a kilogram ($277 a short ton). (Suisan Tsushin, June 12, 1961.)

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SKIPJACK TUNA FISHING IN FULL SWING NEAR TOKYO:

On May 23 a total of 122 metric tons of skipjack arrived at the Tokyo Central Market.

Japan (Contd.):

This was about two times as much as on previous days. Besides skipjack, 38 tons of bluefin, 74 tons of yellowfin, and 80 tons of big-eyed arrived at the market.

The striped tuna schools that had been delayed from appearing by the cold-water mass which appeared just to the south of Kii Peninsula, suddenly began their northward movement and the spearhead of the run arrived at only 10 miles from the tip of Izu Peninsula. As of May 24, a good fishing ground was reported around 34° N. latitude, 139° E. longitude. Vessels from the port of Shimoda in one or two hours arrive in the fishing area, but the capacity of each vessel is only 5 to 10 tons of skipjack. The skipjack on the Tokyo market was caught two-thirds by seine and only one-third by poles. Skipjack is generally recognized as poled fish, but this year's seine catches contradict this assumption.

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CATCH OF TUNA MOTHERSHIPS IN SOUTH PACIFIC:

The two Japanese tuna motherships presently fishing in the South Pacific are reported to have caught the following amounts of fish:

	No. 3 Tenyo Maru (as of June 6)	Nojima Maru (as of May 31)
	(Metric Tons)	
Yellowfin	793	294
Albacore	417	104
Big-eyed	-	56
Other tuna	105	-
Spearfish	206	82
Shark	68	26
Other species	10	11

No. 3 Tenyo Maru early in June was fishing in the area 10° S. latitude, 176° E. longitude; Nojima Maru was fishing in the area 11°31' S. latitude, 174°10' E. longitude. (Suisan Keizai Shimbun, June 8, 1961.)

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TUNA CANNERS PROPOSE LIFTING OF LICENSING RESTRICTIONS ON MEDIUM-CLASS TUNA VESSELS:

The Japanese Canned Tuna Packers Association is instigating a movement to have the Japanese Fishery Agency remove the license restrictions on medium-class tuna fishing vessels (vessels between 40 and 100 gross tons). At present, only tuna vessels under 40 gross tons do not require fishing licenses. The Association hopes that by having the restrictions on licenses removed more vessels will enter the tuna fishery, resulting in an increased supply of tuna. The canners claim that liberalization of regulations permitting larger tuna fishing vessels has brought about a situation where there are now fewer pole-and-line vessels in the 40- to 100-ton size category, thereby contributing to the present critical shortage of tuna in Japan.

The Fishery Agency opposes the proposal, as does the National Federation of Tuna Cooperatives Associations. Figures compiled by the Cooperative Association show that the pole-and-line tuna vessels have declined in numbers since the peak years of 1952 and 1953 and presently total 348 vessels. Of these, 140 vessels fall within the category of medium-type vessels (40 to 100 gross tons). The Association claims that an increase in numbers of fishing vessels in the medium-class will cause tuna prices to drop. For this reason, it opposes the proposal by the canners. (Suisan Keizai Shimbun, May 31, 1961.)

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THREE FISHING COMPANIES ASK TO USE PURSE SEINES IN ATLANTIC TUNA FISHERY:

Three Japanese fishing companies (all affiliated with one large fishery firm) filed applications with the Fisheries Agency for permission to operate the American-type tuna purse seines in the Atlantic fishery.

The Japanese have been studying the success the United States fishing industry is having purse-seining tuna in the coastal waters of of California and off Central and South America. The three companies intend to adopt the purse-seine fishing method for skipjack and other tuna fishing.

The plan presented calls for the construction of tuna purse-seine vessels of the 450-ton class for tuna fishing off the west coast of Africa and off the eastern coast of Central America. According to the three companies' estimates, some 300 tons of tuna may be expected to be caught during one trip of some 40 days. Since the fishing grounds are far, the catch will naturally be landed in Africa or Central and South America. Sales to the United States and European markets will be handled entirely by the large fishery firm with which the three companies are affilated since they will be concerned only with fishing.

Japan (Contd.):

The Fisheries Agency has not indicated its attitude towards the venture. The undertaking is not without problems, according to well-informed sources, particularly (1) as to what extent success is assured of the American-type tuna purse-seining in the Atlantic and it is realized that it can't be successful if fish schools are scattered; (2) since new vessels are being constructed, the initial investment will be large and failure will mean a large loss. (Suisan Shimbun, May 30, 1961)

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FISHING COMPANY PLANS TUNA BASE IN CARIBBEAN AREA:

A large Japanese overseas fishing base at Curacao, Lesser Antilles (island in Caribbean Sea north of Venezuela, which belongs to the Netherlands), appears to be well on its way to becoming a reality. On May 25, 1961, a large Japanese company received word from the Netherlands Government that it fully supported the company's proposal and hoped that the company would immediately proceed with its plans. The company was awaiting approval from the Japanese Fishery Agency to start this undertaking. Approval was expected to be granted about mid-June.

The port of Curacao is a one-industry oil-refining town. The Netherlands Government wants to bring in new industry and, for this reason, is openly welcoming the plan to establish a Japanese fishing base at Curacao.

The Japanese company will lease more than 215,000 square feet of land and invest about 200 million yen (US$555,555) for the construction of a 1,500-ton capacity cold-storage plant, a small fish sausage plant, and other base facilities. The base will be used to handle tuna caught by Japanese fishing vessels. Catch will be sorted at Curacao for export to the United States and Europe. Tuna unsuitable for export shall be used for the production of fish sausages and fish hams. Present plans call for landing about 10,000 metric tons of tuna per year at Curacao and for this base to eventually produce about one-twentieth of all Japanese tuna (including canned tuna) for export.

At present Japanese fishing vessels are using the port of Cristobal, Panama, but this port is far from the tuna fishing grounds. Also, since few foreign vessels call at Cristobal, it is not possible to ship out frozen tuna immediately from this port. In this respect, Curacao has no shipping difficulties since a number of foreign ships call at Curacao. (Suisan Keizei Shimbun, May 27, 1961.)

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REGULATIONS FOR EXPORTS OF FROZEN ATLANTIC TUNA TO EUROPE AND AFRICA:

The Japan Export Frozen Tuna Association in mid-May 1961 decided on the regulations on frozen Atlantic tuna for export to Europe and Africa in 1961 (July-August).

There is little difference from the previous year's regulations. For Europe and Africa, the production quota for each vessel is 2 fishing trips (up to 3 trips are possible for those that are less than 150 tons). For Italy, the top limit is 12,000 metric tons for the fixed-base quota added to a quantity equivalent to what is produced by one-half a trip per vessel. For a new market the quota will be outside of the two-trip limit if approved by the board of directors. (Suisan Tsushin, May 16, 1961.)

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EXPORTERS DISCUSS EXPORTS OF FROZEN TUNA TO EUROPE:

The Japanese Frozen Tuna Exporters Association met on June 13, 1961, to discuss the amount of frozen tuna to be exported to Italy in the second quarter (July to September), frozen tuna exports to Czechoslovakia, and the matter of sending a delegation to Italy to negotiate changes in the present trade agreement.

On the question of exports to Italy, the Association set an export target of 3,000 metric tons of frozen tuna for July 1961. By agreement, Japan is to export 30,000 metric tons of frozen tuna to Italy in 1961 (April 1, 1961, to March 31, 1962) and the Association sets quarterly targets to meet that goal. The fishing companies and exporting firms had supplied figures as to the amount of fish they could supply for the second quarter, but the Association set an export target for July only, and not for the entire quarter due to poor fishing conditions. This matter of targets was to be explored further at the next meeting scheduled for June 20.

Concerning the question of frozen tuna exports to Czechoslovakia, the Association dis-

Japan (Contd.):

cussed a letter from Czechoslovakia that stated that Czechoslovakia would decide whether or not to import additional Japanese frozen tuna after first inspecting the initial shipments of frozen tuna from Japan, which were expected to be delivered sometime in late June; that, if the quality of the initial shipments was good, Czechoslovakia would then import from Japan 2,500 to 3,000 metric tons of frozen tuna which had previously been imported from Norway.

On the subject concerning sending a delegation to Italy to negotiate changes in the trade agreement which Japan now has with Italy, it was pointed out that Italy wants to revise the clause in the present agreement which states that Japan will not be responsible for claims once a transaction has been completed, although in practice Japan has been adopting corrective measures whenever claims were filed.

A Japanese delegation of four members was selected to leave for Italy sometime around mid-July to study the tuna situation in Italy. The visit of this delegation was requested by tuna buyers in Italy. One of the problems that this group will explore involves claims. (Suisan Keizei Shimbun, June 15, and Suisan Tsushin, June 20, 1961.)

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FROZEN TUNA EXPORTS TO YUGOSLAVIA:

Japanese frozen tuna exports to Yugoslavia are expected to total about 12,000 metric tons in 1961. In 1960, frozen tuna exports to that country amounted to 11,364 metric tons, or approximately 18 percent of the 40,000 metric tons of Atlantic Ocean tuna which was exported by Japan. The fish, mainly yellowfin, sold for approximately $260 to $270 a metric ton. These are c.i.f. prices and include five percent commission. In mid-June it was reported that there were two tuna buyers from Yugoslavia in Japan. (Suisan Keizai Shimbun, June 14, 1961.)

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OVERSUPPLY OF ATLANTIC TUNA THIS SUMMER NOT LIKELY:

The Japanese Export Frozen Tuna Packers Association and Frozen Food Exporters Association held a joint meeting on May 19, 1961, to discuss the marketing situation of frozen Atlantic tuna this summer. Ordinarily there is an oversupply of Atlantic Ocean tuna in July and this meeting was convened to discuss measures of meeting the problem.

The joint committee takes the view that there is not a great likelihood of an oversupply of tuna occurring this year. Japanese landings of tuna from the Atlantic Ocean fishery as of May were about half of what they were in 1960 for the same period. Due to the poor fishing conditions, some of the vessels normally engaged in the tuna fishery off West Africa switched to other fishing grounds.

The price of Atlantic tuna as of May was holding firm at about $280 a metric ton. Should poor fishing continue, it is expected that tuna (species unidentified) will sell for $300 a metric ton towards fall. (Shin Suisan Shimbun Sokuho, May 23, 1961.)

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TUNA SHORTAGE CREATING PROBLEM FOR CANNERS AND EXPORTERS:

Tuna canners and frozen tuna exporters in Japan continue to be plagued by the tuna shortage. Frozen tuna exporters presently cannot compete for the high-priced fish, and canners, in order to maintain their export quota which is annually allotted to each firm on the basis of production, must pack tuna even if it means operating in the red for awhile. The high ex-vessel prices are proving a great hardship on the smaller canners in particular.

Fish sausage producers, on the other hand, are reported to be able to pay higher prices for tuna than tuna canners and still show a margin of profit. They are said to be paying as much as 130 yen a kilogram (US$330 a short ton) for tuna, and the fact that they are paying this high price is making it most difficult for tuna canners, not to mention frozen tuna exporters, to compete for the raw supply. Some circles are requesting that measures be adopted to correct this situation. (Nippon Suisan Shimbun, June 7, 1961.)

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PROSPECTS FOR EXPORT OF FROZEN TUNA TO RUSSIA APPEAR DIM:

The president of a large Japanese company flew to Moscow in early March 1961 to consult with Soviet Government officials on

Japan (Contd.):

the possibility of exporting Japanese frozen tuna to the Soviet Union. He returned to Tokyo in early May and stated that talks had not reached a stage where sales could be made because there are problems connected with exporting frozen tuna to the Soviet Union inasmuch as the Soviet Government classifies frozen tuna as a nonessential item. He added that if Japan should agree to import items such as petroleum, lumber, and iron ore from the Soviet Union, it is possible that the Soviet Union would allow the importation of nonessential goods.

The food situation in the Soviet Union is reported to have improved considerably and marine products such as canned salmon and canned saury are said to be found in many of the Russian stores. The Soviet Government is also reported to be encouraging the consumption of marine products and is reported to be constructing tuna fishing vessels. But hope is still held for exporting Japanese frozen tuna to the Soviet Union sometime in the future. (Suisan Keizai Shimbun, May 10, 1961.)

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ALBACORE TUNA SHORTAGE MAY FORCE CANNERS TO PACK MORE LIGHT-MEAT FOR EXPORT:

The 47 tuna-canning plants in Japan affiliated with the Canned Tuna Packers Association started to pack tuna in May 1961, but the plants are reported to be faced with a shortage of raw albacore tuna. The Association held a meeting on May 24 to discuss ways and means of meeting this problem, but did not arrive at any concrete plan. It has requested the Japanese Fishery Agency to study the problem.

In the latter part of May the f.o.b. prices of canned tuna for export were $9.15 a case for whitemeat and $6.80 a case for lightmeat. The ratio of canned whitemeat to canned lightmeat tuna for export purposes is not fixed, and in the past this ratio was about 2 to 1 in favor of lightmeat tuna, although emphasis was placed on packing whitemeat tuna since it brought a better price. Industry seems to hold the view that it may now have to switch to packing more lightmeat tuna due to the shortage of albacore. (Suisan Keizai Shimbun, May 27, 1961.)

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TUNA CANNERS IN SHIZUOKA INDICATE OUTLOOK IS UNFAVORABLE:

The outlook for the tuna canning industry in the Shizuoka area is considered unfavorable because of a drop in the sales of canned tuna for export to the United States and a number of difficult problems on materials, labor, and selling policy. Albacore and skipjack tuna catches cannot be expected to increase much because of the decline in the number of fishing vessels fishing seasonally for tuna off Japan. Probably landings large enough to meet the requirements of the canners cannot be expected.

The packing industry in Shizuoka Prefecture has been growing with the packing of albacore, skipjack in summer, and oranges in winter. In recent years, however, the year's production schedule has been disrupted by the continued poor fishing for summer albacore. Statistics on landings in Yaizu, where more than half of the summer albacore is landed, show 8,500 tons landed in 1958, 5,500 tons in 1959, and 11,660 tons in 1960. The large landings of 15,000-20,000 tons in 1955 or thereabouts seem like unattainable goals.

The drop in landings is attributable to the seasonal and unpredictable nature of the summer albacore fishing resource. Also in recent years, vessels fishing seasonally for tuna have found it unprofitable and they have switched to year-round fisheries. This reduced the number of vessels fishing for albacore and was partly responsible for a further drop in catch. For this reason, ex-vessel prices rose from $251 per metric ton in 1958 to $301-$326 per ton. The recognized fact that the profit made on exports of canned products covered or offset the losses on domestic sales is no longer true, since profits have shrunk to almost zero.

As of mid-May 1961 canned whitemeat tuna was exported at $9.15 per case f.o.b. and, judging from market conditions, it would not be desirable to raise the price even though the ex-vessel price is high. It is considered absolutely essential for the canners to maintain the present price in order to retain the position of the Japanese products on the market. Consequently, the packer is compelled to continue production at the $9.15 price and he can afford to pay only around $276 per ton for his raw tuna. Many in the industry feel that buying raw tuna at a price high enough to make packing unprofitable is unavoidable. Under the circumstances, the industry is seriously studying how to reduce costs. Buying the raw fish needed for canning cooperatively is again being considered, a proposal which has been shelved for the past few years. The objective is to get adequate fish and prevent an increase in the ex-vessel price. The canners seem to be thinking about concluding a price agreement with the fishermen.

Obtaining adequate labor is also troubling canners. Up to a few years ago, they were able to get the desired number of workers, but recently, considerable difficulty has been experienced because the labor supply is dwindling. This is due to the fact that food processors, including packers around Yaizu and Shimizu, have increased in number and, at the same time, the packers are in need of more workers to fully utilize their expanded facilities. Also, a number of large industrial plants have sprung up which are siphoning off much of the labor supply.

The industry is making an effort to lure the workers back by modernizing its facilities and establishing a minimum wage system, but the industry finds it impossible to compete with the larger industries. The canners succeeded in obtaining new graduates from schools this spring, but the number was far short of what they needed. They were still plagued with lack of labor in mid-May as the peak in the canning season was approaching.

Usually, May is the peak of the season. Last year, 200-300 metric tons of summer albacore per day were landed at the Yaizu market beginning the latter part of April. This year, however, their vanguard had not yet been seen and the fishing season seemed to be late getting started. The packers who had been packing other minor products, after finishing with orange canning, were impatiently waiting for the beginning of the summer albacore fishing. (Suisan Keizai Shimbun, May 12, 1961.)

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Japan (Contd.):

STOCKS OF CANNED TUNA IN BRINE:

The Japan Export Canned Tuna Fisheries Association announced late in May 1961 that the stocks of canned tuna in brine on hand in Japan as of March 31, 1961, amounted to 301,789 cases, of which 297,243 cases were white tuna and 4,546 cases lightmeat tuna. (Nippon Suisan Shimbun, May 26, 1961.)

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EXPORT PRICES OF CANNED TUNA IN BRINE RAISED:

The Japanese export price of canned tuna in brine produced from skipjack will be raised 50 cents a case, from $6.80 to $7.30 a case f.o.b. Japan. This new price was agreed on at a meeting held between packers and exporters on June 5, 1961. This increase applies to canned skipjack only. On June 6, canned tuna exporters submitted to the packers a proposal to increase the export price on canned yellowfin in brine by 80 cents a case.

Packers came out strongly for the increase due to a shortage of skipjack tuna, which has resulted in higher prices being paid for that species. However, very little skipjack has been canned since January of this year and it will be interesting to see if this price increase will stimulate the production of canned skipjack. Depending on production, this price may possibly be changed again in the future.

The Tuna Standing Committee of the Japanese Canned Food Exporters Association held a meeting on June 6, 1961, to discuss the next sale of canned tuna and raising the export price of canned lightmeat tuna. The Association drafted the following proposals for submission to the tuna packers for their approval:

1. Raise the export price (now about $6.80 a case) of canned yellowfin tuna in brine by 80 cents a case. However, the sale of canned yellowfin at the next sale (200,000 cases) of canned lightmeat tuna for the period June to August would be limited to a maximum of 100,000 cases, with consideration being given to the sale of large-size cans of canned yellowfin.

2. In addition to 150,000 cases of canned whitemeat tuna, the Association will sell all the canned lightmeat tuna (6,000 cases of skipjack and 22,000 cases of yellowfin) presently held in stock by the joint sales company. Also, canned skipjack will be sold as supplies become available.

Although the market in the United States for Japanese canned tuna in brine seemed to be fairly firm as of early June, prices for United States-packed canned tuna in oil have shown no tendency to rise. Therefore, Japanese trading firms are inclined not to raise the price of the Japanese pack by $1.50 a case as asked by the canners.

Canned tuna exporters met again on June 12 to discuss ways of marketing canned skipjack and canned yellowfin under the new prices since both products are sold as lightmeat tuna and it is not possible to differentiate between them. Agreement was reached at this meeting to consider 7-ounce cans of lightmeat tuna as being made wholly from skipjack and 13-ounce and 4-pound cans of lightmeat tuna as being a mixture of yellowfin and skipjack. Definite prices for the different sizes of lightmeat tuna have not been made public as yet, but the exporters will include this information in the proposal which they will submit to the joint sales company. The proposed prices will affect only the 200,000 cases of canned lightmeat tuna in brine to be offered between the period June to August 1961. (Suisan Tsushin, June 6, 7, and 13, 1961, and Suisan Keizai Shimbun, June 8, 1961.)

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CANNED TUNA SUPPLY REPORTED LOW:

The shortage of tuna in Japan appears to be getting more serious. On May 8, 1961, four members of the Export Canned Tuna Packers Association called on the Japanese Fishery Agency to request that a part of the increase of 9,300 metric tons of tuna given to the tuna mothership companies be allotted for the production of canned tuna. Earlier the Japan Fish Sausage Association had approached the Fishery Agency and requested that 80 percent of the increase in the tuna mothership catch quota be allotted for the production of fish sausages. (Suisan Keizai Shimbun, May 10, 1961.)

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CANNED SARDINES NOT BEING OFFERED TO PHILIPPINES:

The National Marketing Corporation (NAMARCO) of the Philippine Government

Japan (Contd.):

planned to hold the second quarterly bid opening for canned sardines in mid-June 1961, but Japan will not be tendering any offers for three reasons: (1) Instability of the Japanese sardine fishery this year. Japan is not confident that a sufficient supply of sardines will be available. (2) The embossed label restriction which prevents Japan from going into production before a contract is agreed upon. (3) The belief that Japan will be able to sell canned sardines to other countries. This belief seems to be influenced by the unhappy experience Japan had with NAMARCO over claims.

On the other hand, some quarters in Japan are suggesting that Japan should perhaps tender offers at about the same price as the United States. In the past, Japan offered canned sardines at $7.00 to $8.00 a case; the United States $10 to $10.50 a case.

Rumors are spreading that NAMARCO may stop accepting further bids from the Union of South Africa. Also, the Philippine Central Bank is reported to be considering a proposal to reject license applications to import South African products. It appears that the African-Asian bloc of nations which strongly opposes the apartheid policy of the Union of South Africa is advocating the adoption of these measures.

The Philippine Islands is a leading importer of South African canned sardines. Statistics show that the Philippine Islands imported approximately 500,000 cases of canned sardines from South Africa in 1959, or roughly one-third of South Africa's total export of canned sardines. In 1960, the Philippine Islands is estimated to have imported a greater amount of canned sardines from South Africa on a percentage basis, since such countries as Ghana, Malaya, and Burma, which previously imported large amounts of South African canned sardines, began to boycott South African products in 1960. (Suisan Tsushin, June 15, 1961.)

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STANDARDS FOR MANY CANNED FISHERY PRODUCTS PLANNED:

The Japanese Ministry of Agriculture and Forestry on May 20 announced new Japanese agricultural standards for 21 canned aquatic products made of six species such as skipjack tuna, other tuna, horse-mackerel, sardine, mackerel-pike, and mackerel. The purpose for establishing the standards is to assure a uniform quality for exports. The date when the standards go into effect is expected to be after August 1961. The Ministry also plans to establish standards for canned orange, salmon, and trout, and crab meat in the near future. Standards for three canned whale meat products were established not long ago.

The standards for canned aquatic products are similar to those issued for canned meat products. Standards provide that (a) labeling which misrepresents the contents is prohibited; (b) the label should clearly state the species, the type and size of the contents, including the seasonings used; (c) the label should clearly state the name of the product, weight of the contents and over-all weight, and the percentage of each major ingredient used, and should contain the standards shield.

The standards for aquatic products differ from those for meat products. For aquatic products: (1) names of the kind of product and brand are not required to be shown together but should be clearly shown; (2) no designation need be made of the weight of solid contents of sardines in oil and various products canned in water, but solid contents must be more than 80 percent of the total weight of the contents; (3) in case of tuna in oil, it should be identified as to whether it is white or light meat.

The 21 canned marine products which are to be covered by standards are: tuna in oil, skipjack in oil, seasoned tuna in oil, seasoned skipjack in oil, tuna in vegetables, skipjack in vegetables, Pacific mackerel natural, Pacific mackerel seasoned, Pacific mackerel in soybean paste, sardines in oil, sardines natural, sardines seasoned, sardines broiled, sardines in tomato sauce, saury natural, saury seasoned, saury broiled, saury in tomato sauce, jack mackerel natural, jack mackerel seasoned, and jack mackerel in tomato sauce. (The Suisan Tsushin, May 29, 1961, Shin Suisan Shimbun, May 22, 1961.)

Note: Japanese make a distinction between skipjack, albacore, and other species of tuna. "Tuna" includes yellowfin, bigeyed, and bluefin.

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SMALL FISH-CANNING COMPANIES TO BE ACQUIRED BY LARGE FIRMS:

The large fishing companies and commercial houses in Japan are reported to be push-

Japan (Contd.):

ing ahead with plans to control the smaller fish-canning companies for the purpose of increasing the production and consumption of their own brands. In this regard, the large fishing companies, which started to expand their marketing activities on a nation-wide scale since last year, are reported to have succeeded in limiting the number of different brands appearing on the market. To meet this competition, the large commercial houses, which own well-known brands and have excellent sales networks in Japan as well as in foreign countries, are reported to be seeking new tie-ups with the smaller fish-canning companies to protect their name brands and to acquire supplies. This competition within Japan has served to focus attention on the need of consolidating brands for the export market, such as in the United States, to meet the competition of other foreign products.

The above trend gained momentum last year following the poor tuna fishing season, and has been further accelerated this year due to the continuing poor season. Many smaller packers, in order to maintain their export quota which is allotted to them on the basis of production, have had to remain in production despite operating in the red. To continue operations, they obtained loans from the large fishing companies and commercial houses to tide them over the successive poor seasons, and have found themselves compelled to tie-up with these larger firms, which attached strings to the loans. (Nippon Suisan Shimbun, June 17, 1961.)

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STEEL COMPANY MAKES CHROME-PLATED STEEL SHEETS FOR CANS:

A Japanese iron and steel firm has succeeded in manufacturing chrome-plated thin steel sheets for the manufacture of cans and announced that it would put the product on sale in October 1961. The characteristic of the new product as compared with regular tin plate is that the new product is cheaper and resists corrosion. The manufacturing technique is entirely Japanese and the company intends to apply for a patent in the United States.

The price of the new product is expected to be $194 per ton, compared with $250 per ton for tin plate. The only difficulty with the new product is that it is harder to solder than ordinary tin plate or galvanized steel sheets.

The Japanese firm making the chrome-plated steel sheets is one of the largest iron and steel mills in Japan and was reported to have succeeded in obtaining a loan of $16,700,000 from the Import-Export Bank in the United States recently. (Japanese newspaper, June 5, 1961.)

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PRODUCTION OF FISH HAM AND SAUSAGES:

Japanese production of fish hams and sausages for 1960 amounted to 85,442 metric tons, compared with 64,670 tons in 1959--an increase of 32 percent for 1960, according to the Fish-Meat Ham and Sausage Society. Judging from sales during January-May this year, production is expected to amount to more than 100,000 tons in 1961, 30 percent more than 1960, according to estimates by the largest companies producing these products. Nearly all large Japanese fishery companies are engaged in processing fish hams and sausages.

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FISHERY AGENCY HOPES TO ESTABLISH INTERNATIONAL FISHERIES ADVISORY GROUP:

The Japanese Fishery Agency hopes to establish a single body called the "International Fisheries Policy Study Committee," which would be staffed by experts from Government and industry and concentrate on problems relating to international fisheries. The primary function of the International Fisheries Policy Study Committee would be to study available data on resources, inasmuch as all international fisheries disputes involve the basic problem of resource, and make recommendations to the Fishery Agency.

At the present time, problems concerning international fisheries involving Japan on the one hand and such countries as the Soviet Union, China, Korea, etc., on the other, are being handled by separate groups composed of Government and industry members. Industry members naturally express views with an eye to their own company's welfare, whereas the Fishery Agency is concerned with the welfare of the nation as a whole.

The idea of establishing an International Fisheries Policy Study Committee is not new.

Japan (Contd.):

Its formation had been considered in the past but this was as far as it got due to difficulties over policy and budget. It is likely that the Ministry of Finance may contend that such foreign activities are the responsibility of the Ministry of Foreign Affairs and may be reluctant to allot funds to establish this activity. (Suisan Keizai Shimbun, June 9, 1961.)

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SALMON OPERATIONS IN THE NORTH PACIFIC OCEAN:

On May 21, 1961, a total of 12 Japanese salmon motherships accompanied by 410 catcher vessels departed from Hakodate and Kushiro in northern Japan for the salmon fishing grounds in the North Pacific Ocean and Bering Sea. The salmon fleet left port as soon as the Northwest Pacific Fisheries Commission (Soviet Union and Japan) concluded its fifth annual meeting at Tokyo on May 21. The fishing fleets were due on the fishing grounds about May 28 and were scheduled to operate until the end of the season on August 10.

Japan's 1961 salmon quota in the Treaty area will be 65,000 metric tons and the Japanese Government has divided this quota as follows: 53,600 metric tons to the salmon mothership fleets and 11,400 metric tons to the land-based gill-net fishing fleet operating in the Treaty waters south of 48° N. No salmon long liners are permitted to operate in the Treaty area. The Soviet Union's 1961 salmon catch target is 80,000 metric tons.

As a result of the new fishing agreement, Japan's salmon catch for this season is expected to be 65,000 tons inside and 70,000 tons outside the Treaty area for a total of 135,000 tons--4,500 tons less than last year.

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SALMON MOTHERSHIP FLEETS IN NORTH PACIFIC MAKE EXCELLENT CATCHES:

Early in June 1961, the Japanese salmon mothership fleets in the North Pacific were reported to be concentrated in the area south of Attu Island and were said to be catching an average of over 100 metric tons of salmon per fleet per day. Red salmon of large size, according to reports, made up the bulk of the landings.

The Japanese salmon fleet departed port two days later this year but was reported to have exceeded last year's catch for the period up to June 1.

Around June 9 the Japanese press reported all 12 salmon motherships concentrated in the area between 170°25' east and 180° and 49° and 52° north. Catches were reported the highest in the postwar period with an average daily catch per fleet of 80 tons (evidently as fleet continued fishing average dropped) as compared to 65 tons in 1960. Catches were composed of 60 percent red or sockeye salmon and about 40 percent chum, with only nomial showings of pink. (United States Embassy, Tokyo, June 9, 1961.)

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KING CRAB FLEETS IN NORTH PACIFIC REPORT GOOD FISHING:

The Japanese king crab fleets operating in the Okhotsk Sea and in Bristol Bay are reported to be having excellent crab fishing. All crab fleets are said to be averaging about 12 crabs per tan of tangle nets. The Okhotsk Sea fleets have packed 25 percent of their quota of 260,000 cases of canned crab meat and the Tokei Maru (Bristol Bay) 45 percent of its quota of 80,000 cases. (Suisan Keizai Shimbun, May 26, 1961.)

Japanese King Crab Fleets' Production as of May 22, 1961

Area	Fleet	No. Cases	Percentage Recovery	No. of Crabs Caught Per Tan
Okhotsk Sea	Hakuyo Maru	16,021	30.1	12.0
" "	Yoku Maru	18,900	28.3	12.6
" "	Kaiyo Maru	15,483	30.2	11.4
" "	Shiraneyama Maru	14,244	27.8	11.7
Bristol Bay	Tokei Maru	35,658	-	11.9

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HALIBUT CATCH TARGET OF 28 NORTH PACIFIC BOTTOMFISH FLEETS:

The halibut catch target of the 28 Japanese bottomfish fleets scheduled to operate in the North Pacific (of which 20 are already on the fishing grounds) totals 47,000 metric tons. This represents an increase well over six times that of last year's catch of 7,200 metric tons. Of this year's catch, about 2,000 to 3,000 tons of frozen halibut are expected to be exported to the United States.

In 1960 the price of frozen halibut steaks exported to the United States was 35-38 cents

Japan (Contd.):

a pound, c.i.f. delivery east coast of the United States. In view of the much larger production this year, the export price is expected to fall to 32-33 cents a pound. (Suisan Tsushin, June 2, 1961.)

Editor's Note: Previous reports had announced the halibut catch target for 24 of the 28 fleets as 37,891 metric tons.

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GOOD FISHING REPORTED BY SHRIMP FACTORYSHIP IN NORTH PACIFIC:

A large Japanese fishing company's factoryship Eijin Maru (7,400 gross tons) commenced shrimp fishing in the Bering Sea on May 20, 1961. As of May 23, the Eijin Maru packed 723 cases of canned shrimp, and 103 metric tons of frozen shrimp, and 21 tons of other products. Eijin Maru was operating in the vicinity of 57° N. latitude, 170° W. longitude.

The factory ship is scheduled to fish and pack for 130 days and is expected to return to Japan in mid-October 1961. The production target is 60,000 cases (48 7-oz. cans) of canned shrimp and some 3,500 tons of frozen shrimp, rockfish, Alaska pollock, and cod. (Suisan Keizai Shimbun, May 26, and June 8, 1961.)

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NORTH PACIFIC BOTTOMFISH FISHERY TRENDS AS OF MAY 22, 1961:

A large Japanese fishing company's stern trawler, No. 50 Akebono Maru (1,470 gross tons), operating in Aleutian Island waters was reported to have caught 1,581 metric tons of fish as of May 22, 1961. Catch by species was: flatfish 1,062 metric tons, cod 37 tons, Alaska pollock 267 tons, rockfish 82 tons, shrimp 133 tons. (Suisan Keizai Shimbun, May 28, 1961.)

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FISHING COMPANY PLANS EXPERIMENTAL TRAWLING OFF KODIAK ISLAND, ALASKA:

A large Japanese fishing company is planning to carry out experimental trawling off Kodiak Island, south of the Alaskan Peninsula. It is reported that the area has stocks of halibut, shrimp, and silver cod. Last year two other fishing companies, plus the one planning to trawl this year, conducted individual experimental trawling operations and found that catch prospects were good.

This year's operation is expected to be on a small scale, using 2 or 3 research vessels. (Suisan Keizai Shimbun, May 31, 1961.)

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ANOTHER COMPANY PLANS TRAWLING OPERATION OFF NORTHWEST AFRICA:

A third Japanese fishing company plans to participate in pelagic trawling beginning next year in the Atlantic off the west coast of Africa. The company will construct two large stern trawlers of the 1,500-ton class. One of the two will be completed by the year-end and the other by April 1962. At first, they will be used for fishing off New Zealand and later for development of fishing grounds off the northwest coast of Australia prior to being sent to the Atlantic off northwest Africa. Previously, two other companies had announced plans for trawling operations off northwest Africa. (Suisan Keizai Shimbun, June 2, 1961.)

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GOVERNMENT TO SUBSIDIZE CONSTRUCTION OF TWO COLD-STORAGE PLANTS:

The Japanese Government has launched a four-year plan to subsidize the construction of 12 cold-storage plants and facilities in Japan. To get this program started, the Japanese Fishery Agency was allotted a budget of 100 million yen (US$277,777) for FY 1961 (April 1, 1961 to March 31, 1962). This sum includes 97,500,000 yen ($270,833) for subsidizing up to 30 percent of the construction of two cold-storage plants and 2.5 million yen ($6,944) for subsidizing the construction of refrigerated rail cars.

For 1961 the Fishery Agency has selected the ports of Miyako (Iwate Prefecture) in northern Japan and Fukuoka (Fukuoka Prefecture) in southern Japan to receive this aid. Miyako was selected to help stabilize its saury fishery and Fukuoka was chosen to assist that city's mackerel fishery. Under the Government-aid plan, in addition to financial assistance to construct a freezing plant, Miyako will get two refrigerated rail cars and Fukuoka one. (Nippon Suisan Shimbun, May 26, 1961.)

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Japan (Contd.):

FISH MEAL PRICES, JANUARY-APRIL 1961:

Average domestic wholesale and export fish meal prices for January-April 1961 quoted by the Aquatic Oils Association of Japan were as follows:

Japanese Average Fish Meal Prices, January-April 1961

	Domestic Wholesale Price		Export Price (f.o.b.)	
	US$ Per Metric Ton	US$ Per Short Ton	US$ Per Metric Ton	US$ Per Short Ton
1961				
January . .	1/161.67	1/146.67	139.42	126.48
February .	165.00	149.69	147.20	133.54
March . . .	166.67	151.20	149.00	135.17
April . . .	163.89	148.68	2/	2/

1/Revised.
2/Not available.

The average price for April includes prices for saury, atka-mackerel, launce, jack mackerel-sardine meal, and fish waste cake (45 percent protein of cod and pollock). The price of fish waste cake was $125 a metric ton while the prices of the other types ranged from $161.11 to 166.67 a metric ton. (United States Embassy, Tokyo, June 9, 1961.)

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LANDINGS OF FISHERY PRODUCTS IN 1960:

Japan's total landings (excluding whaling operations) in 1960 amounted to 6,192,000 metric tons--5 percent more than the previous year when 5,880,000 tons were reported. For the first time, landings surpassed the 6,000,000-ton mark and established a new record. While in 1960 flatfish landings by mothership-trawling operations in northern Pacific waters almost doubled and horse-mackerel and common mackerel landings increased, mackerel-pike landings dropped as compared to 1959. In spite of increased landings, the average ex-vessel price of 13 cents per kilogram (5.9 U.S. cents a pound) was 18 percent higher than in 1959. Total ex-vessel value was $922,222,222, about $150 million more than the previous year. Whaling production amounted to 18,800 blue-whale units, a decrease from the previous year.

Marine landings amounted to 5,812,000 tons, 4 percent over the previous year. The increase is attributed to the catch in the North Pacific of fish for reduction (420,000 metric tons of fish utilized in the production of fish meal, twice as much as in 1959), horse-mackerel landings from the East China Sea, and tuna long-line catches in the Atlantic. Increases in those landings were partially offset by poor fishing for mackerel-pike, dip-netting, and hook-and-line skipjack tuna fishing. But prices were unexpectedly good. Trawling west of 130° in the North Pacific, medium-size trawling, and purse-seining catches were fairly stable. On the basis of species alone, 1960 landings were down by 43 percent for skipjack, 45 percent for saury, and 34 percent for sardines.

The catch of fresh-water fisheries amounted to 73,000 tons, and fish-culture yielded 280,000 tons.

The tuna long-line fishery with bases in Japan in 1960 caught 322,000 tons, 10 percent more than in 1959. Landings by the tuna long-line fishery with bases in the Atlantic were up 44 percent and amounted to 72,000 tons. The landings by the North Pacific mothership trawling operations in 1960 were

Japanese Landings of Principal Species, 1959-60

Species	1960	1959
	. . . .(1,000 Metric Tons)	
Sardine	78	119
Anchovy	349	356
Horse-mackerel	595	432
Mackerel	351	294
Mackerel pike	287	522
Skipjack tuna	94	166
Bluefin tuna	65	51
Albacore tuna	89	68
Big-eyed tuna	72	74
Yellowfin tuna	154	126
Salmon, trout	152	184
Flatfish, flounder	509	262
Cod	67	66
Alaska pollock	379	376
Atka mackerel	115	100
Others	1,166	1,130
Total fish	4,522	4,326
Shellfish	504	464
Other aquatic animals . .	776	753
Seaweeds	386	337
Grand total	1/ 6,188	5,880

1/No explanation is given as to why this total is less than the total of 6,192,000 tons mentioned in the text.

226 percent more than in 1959. The skipjack hook-and-line fishery landed 109,000 tons, 40 percent less than in 1959. (Japanese newspaper and Suisan Keizai Shimbun, June 1, 1961.)

* * * * *

SCIENTIST SUCCEEDS IN HATCHING TUNA YOUNG:

The Nankai Regional Fisheries Research Laboratory (Kochi, Kochi Prefecture) reports that one of its scientists has succeeded in rearing big-eyed tuna from the egg stage and obtained valuable information concerning the morphology of the young of that species.

The experiment was conducted by stripping eggs from a ripe female big-eyed tuna and fertilizing them with sperm from a male big-eyed tuna. Water temperature was held between 28° and 29° C. (82.4°-84.2° F.). The first cell cleavage occurred in 40 minutes and tuna young (1.5 millimeters long) emerged after 21 hours.

This hatching experiment was done on the research vessel Taisei Maru, 579 gross tons, of Mie Prefectural Fisheries Research Station, while the vessel was engaged in tuna research in the Indian Ocean in February 1961. Three separate experiments were run, two of which met with success and two baby tunas were hatched.

The results of this work are to be reported at the Pacific Science Congress to be held in Honolulu in August. (Nippon Suisan Shimbun, May 31, 1961.)

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Japan (Contd.):

MODERN OYSTER CANNING AND FREEZING PLANT:

In Hiroshima, Japan, there was opened in 1960 a modern oyster-freezing and canning plant. It is owned and operated by a leading Japanese salmon-canning firm.

The oyster processed is Ostrea gigas, known on the North American west coast as the Pacific oyster. The oysters are grown in Hiroshima Bay. Raft culture only is employed. The oysters are grown on wires suspended from bamboo rafts and thus never touch the sea bottom. This method keeps them free from mud and drills and in a continuously moving current of water which promotes rapid growth.

The frozen and canned products are for export. Before entering the building, the shell oysters are spray-washed with water containing 100 parts per million of chlorine, and during processing the oysters are washed with water which meets drinking water standards. The oysters are hand-opened because steam opening has a tendency to shrink and toughen them.

Both frozen and canned oysters are hand-packed. The former are frozen individually in polyethylene sheets, formed into individual pockets and with a labeled cover which is heat-sealed before freezing. Freezing is done in 20 minutes at -30° F. Tunnel-freezing capacity is 10 tons of shucked oysters in 8 hours.

Technical guidance in plant design, equipment, and sanitary and quality control was provided by a west coast United States firm, which has been in the oyster business for many years, utilizing spat imported from Japan. This firm has world distribution rights to the oyster products produced by the Japanese plant. (Fisheries Newsletter, March 1961.)

* * * * *

TOKYO'S FISH MARKET LARGEST IN ASIA:

Fish dealers throughout Tokyo converge each morning at the Uogashi fish market in Tsukiji, the largest wholesale fish market in Asia. The market is formally called the Metropolitan Central Wholesale Market. Although it also deals with fruits and vegetables, it is commonly known as the "fish market," and supplies a daily average of 1,600 tons of fish to the nine million citizens of Tokyo.

Approximately 1,600 licensed brokers and 25,000 retail fishmongers are at the market every morning, where a day's transaction reaches an average of ¥150 million (US$417,000).

The origin of this market dates back to 1590 (18th year of Tensho) when Ieyasu Tokugawa established his Shogunate headquarters in Tokyo, then called Edo. Chief fisherman Mogoemon Mori, together with 30 others, was ordered by Ieyasu to supply fish required by his headquarters. The fish market was located on the banks adjacent to the Nihon-bashi in the center of Tokyo, and it prospered until destroyed by the 1923 earthquake. Immediately after the earthquake, it was relocated at its present site.

A typical day at the market, except for three regular holidays a month, begins at 4 a.m. The dim lights from the ceiling illuminate a vast variety of fish, some placed directly on wooden boards and others packed in wooden pails and cases. The first trickle of men are the brokers who act as middlemen between wholesalers and retail fishmongers. They check the variety and freshness of the fish displayed for the auction sales. The fish have been carried into the market from all parts of the country by trains, trucks, and vessels, arriving at the market from 10 p.m. of the previous night.

In the market, there are seven wholesale firms to which the fishermen entrust the sale of their fish--at a margin of six percent. About 60 percent of the fish is transported to the market by freight trains, 25 percent by trucks, and the rest by fishing boats. These fish are sorted and displayed by cargo agents who work throughout the night. The fish is sold to the highest bidder at the daily auction. Scores of brokers surround the wholesalers and go through the auctioning procedure with shouts and unique hand-signs. The bidding closes within an hour or so, and the fish is then carried to the stalls of brokers in the market to be sold later in the morning to retailers.

The brokers classify the fish by size and kind for the convenience of the retailers. Among the 1,600 auctioneers engaged in the bidding are several large independent buyers

Japan (Contd.):

for chain restaurants, schools, and institutions such as the Japan Self-Defense Forces and others. When the auction sales are closed, registered fish retailers come to the market. The rush hour created by these retailers is around 8 a.m., when the 200,000-square-meter market is filled with trucks, tricycles, and handcarts.

There are five ice plants inside the area, and five ice rooms capable of storing up to 9,000 metric tons of fish. In addition, there are offices and space for transport companies, restaurants, barber shops, fish companies, and labor unions.

All of the market buildings and the lots are owned by the Tokyo Metropolitan Government, which receives some ¥500 million ($1,390,000) in annual rentals. About 200 employees of the Tokyo Metropolitan Government work at the market to facilitate its operations and management.

The most popular varieties of fish handled in the market are sardines, tuna and bonito, swordfish, red sea-bream, mackerel, mackerel-pike, flatfish, yellowtail, cuttlefish, whale, and blue shark. (Japan Report, May 15, 1961, Consulate General of Japan, New York City.)

Liberia

TUNA FISHING COMPANY ESTABLISHED BY JAPANESE:

As a second venture in West Africa, one of the large Japanese fishing firms has formed the Tuna Fishing Company of Liberia, according to the May 12, 1961, issue of Dansk Fiskeritidende, a Danish fishery periodical.

Soon there will be constructed in Monrovia, Liberia's capital, a fishery plant which will can tuna landed by six Japanese tuna vessels. In the next two years the fleet will be expanded to 30 vessels.

It is understood that the Liberian company will form the Japanese mother company's main undertaking in Africa. A similar affiliated enterprise already has started operations in Freetown, Sierra Leone, also on the West African Coast.

Malaya

JAPANESE-MALAYAN TUNA COMPANY IN FULL OPERATION:

During a period of 15 months to the end of April 1961, the Japanese-Malayan tuna company at Penang, Malaya, bought 1,234 metric tons of tuna from Japanese fishing vessels. The Malayan firm produced from the fish 70,610 cases of canned tuna (mainly in oil), 240 tons of frozen fish, and some fish sausages and fresh fish.

Offers for canned tuna from Europe came in as soon as sample cans had been distributed. Forward sales for six months have been contracted.

The firm's needs for Japanese fishing vessels have been filled. (Japanese periodical, June 1, 1961.)

Netherlands

ANTARCTIC WHALING PRODUCTION FOR 1959/1960 AND 1960/61 SEASONS:

The management of the Nederlandse Maatschappij voor de Walvisvaart (Netherlands Whaling Company) of Amsterdam has announced final figures on the total production of its Antarctic whaling expedition for the season ending April 6, 1961.

Netherlands Antarctic Whaling Production, 1959/60 and 1960/61

Product	Season	
	1960/61	1959/1960
	(Metric Tons)	
Whale oil	21,588	23,505
Sperm oil	1,708	337
Whale meal	3,947	4,711
Frozen whale meat	2,139	1,725
Meat for Japanese refrigerating vessel	5,187	-

Since total production of whale oil is over 20,000 metric tons, it is expected that the maximum dividend of six percent will be paid for the fiscal year ending on June 30, 1961. The contract between the Netherlands Whaling Company and the Netherlands Government stipulates that the maximum dividend of six percent will be paid when production of whale oil is over 20,000 tons.

The entire 1960/1961 whale oil production has been sold to a British firm at £73/10 (US$205.80) a long ton as compared to £72/10 ($203.00) a ton in the previous year. (United States Embassy, Amsterdam, April 20, 1961.)

Note: Also see Commercial Fisheries Review, July 1960 p. 68.

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Netherlands (Contd.):

PROFITS FROM 1960/61 ANTARCTIC WHALING SEASON DECLINE:

The Netherlands Whaling Company of Amsterdam has released preliminary financial figures for the 1960/1961 whaling season. In the statement accompanying the figures the management states that operating profits amounted to approximately fl. 6.5 million (US$1,796,000) as compared to fl. 6.8 million ($1,878,000) for the 1959/1960 season. Net profits will reportedly amount to only fl. 100,000 ($28,000), as compared to fl. 1.1 million ($304,000) for the previous fiscal year as a result of a loss of fl. 900,000 ($249,000) caused by the revaluation of the guilder. However, a paper profit on the sale of the former factoryship Bloemendael to a Japanese company will compensate the revaluation loss, since the Bloemendael was sold before the revaluation. The dividend for 1960/1961 is expected to remain unchanged at six percent, the United States Consulate in Amsterdam reported on June 6, 1961.

Note: One guilder (abbreviated fl.) is equal to about US$0.276.

Nigeria

JAPANESE-NIGERIAN JOINT FISHERY ENTERPRISE PLANNED:

An economic mission of the Nigerian Government was expected to arrive in Japan in mid-June 1961 to ask for a long-term loan to establish a joint Nigerian-Japanese fishing, canning, and reduction company. The company would be capitalized at ¥500 million (US$1,389,000) at the first stage, consisting of ¥150 million ($416,000) of cash plus other assets from Japanese interests, ¥200 million ($556,000) from the Nigerian Government, and ¥150 million ($416,000) from one Nigerian shipping and trading company.

During the 3-year plan, about a dozen Japanese tuna vessels of 100-150-ton class would be sent to Nigeria to catch annually about 25,000 metric tons of tuna. A cold-storage plant for 2,000 tons of frozen fish, a cannery, a reduction plant, and a processing and salt fish plant would be built.

It is said that most of the products produced would be marketed locally and that in the future a fish school with laboratory would be constructed. (Japanese fishery periodical, March 31, 1961.)

* * * * *

SURVEY OF FISHERIES POTENTIAL OF WESTERN REGION PLANNED:

The western region of Nigeria has been allotted $564,000 from the United Nations Special Fund for a survey of the area's fisheries. In addition to the Special Fund allocation, the Government of Nigeria will contribute the equivalent of $265,000 towards the cost of the survey, which will be conducted by the Food and Agriculture Organization.

Due to the high consumption of fish in the Western Region of Nigeria, half of which is imported, it has been decided to explore the possibility of setting up a modern system of fish production and distribution. The Special Fund assistance in carrying out a fisheries survey of the area will involve two phases. The first, lasting one year, will consist of a survey to determine the most economical way of catching fish and of collecting fish from scattered villages and delivering them to a central distribution point on land. This phase will also cover fish production, handling, processing, and possibly the feasibility of fish pond culture. If the survey confirms the feasibility of developing fisheries, the project will then proceed to demonstration and pilot schemes to determine the most economical methods of undertaking development and expansion of the fishing industry.

A 20-foot aluminum surf boat designed and built in England for the Nigeria Fisheries Department. It is an experimental vessel designed under Food and Agriculture Organization guidance for ring-net fishing. Shows the rudder being placed in position during the first trials of the boat.

Norway

NEW DESIGN OF STERN TRAWLER PROVIDES PALLETIZED STOWAGE OF CATCH:

A "look-all-round" wheelhouse and fish stored in aluminum pallets are two of the interesting features in a new shelterdeck stern-trawler design developed by a Bergen, Norway, shipyard. Designs have been developed for trawlers of 186 feet and 213 feet. Before laying the designs, observations were made of the factoryship-trawler Fairtry III; and Russian, German, and Dutch designs for stern trawlers were studied.

Particular attention was paid to factors such as range and versatility, as the vessels must be equally suitable for long salt-fish trips or short trips to provide fresh fish for coastal processing plants.

To facilitate the discharge of raw fish to the processing plants, the catch will be boxed in aluminum boxes or trays stacked on pallets, and the floor of the fish hold will be kept clear for the movement of forklift trucks. The fish hold will have a capacity of 2,900 boxes. Each box will hold a layer of ice and 100-110 pounds of fish. In the lower hold, each pallet will hold 22 boxes and in the 'tween decks, 18 boxes. In the smaller of the two designs, there is provision for two tanks in which it is hoped to store minced waste, if means can be found to preserve it.

The deck layout will be such that there is a minimum trawl deck length of 70 feet, and gear will be handled in a manner similar to that developed on the original Fairtry. Below decks, it is intended to keep the fishing gear operations and fish-stowing and gutting activities sharply separated by means of structural division. The fish will be gutted below the trawl deck aft, and processing machinery and fish meal plant may be installed at the owners' discretion. At present it is planned to keep the bulk of the fish in boxes in a chilled fish hold. Prime fish such as halibut will be frozen in the round and kept in cold storage. (World Fishing, May 1961.)

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STERN TRAWLER EXPECTED TO EXTEND FISHING TIME AT SEA:

Norway's first stern trawler, the 630-gross ton, 151-foot long, Hekktind, was built in North Norway at a cost of about Kr. 3.5 million (about US$489,500). Designed for deep-sea fishing, it can carry about 380 metric tons of fresh fish in 2,400 standard size aluminum cases. Its refrigerated storage room has a capacity of over 10,000 square feet.

An ordinary Norwegian trawler operates about 250 days a year, but its effective fishing time is much less. With the Hekktind, it is hoped, the effective fishing time can be extended to about 250 days out of 325 operating days a year.

Before the contract was signed for construction of the Hekktind, nearly Kr. 1 million (US$140,000) was spent on preparatory work and tests in the Ship Model Tank at the Institute of Technology in Trondheim. (News of Norway, May 4, 1961.)

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COD FISHERY TRENDS, JANUARY 1-MAY 5, 1961:

The 1961 season's total landings of mature cod and young cod in Norway January 1-May 5, 1961, amounted to 108,325 metric tons, compared with 96,209 tons last year. Of the landings, 60,263 tons were sold for drying, 24,808 tons for salting, while 23,254 tons were sold fresh (including 14,007 tons for filleting). The fishery also yielded for the season 48,049 hectolitres (4,469 metric tons) of cod-liver oil. (Fiskets Gang, May 11, 1961.)

Peru

FISH MEAL PRICES AND SALES, FEBRUARY 14-APRIL 30, 1961:

In an attempt to help stabilize the world market for fish meal, Peruvian producers have formed an association (Consorcio Pesquero del Peru) or Consortium. The Consortium will administer Peru's 600,000-metric-ton export quota and allocate the quota among the Peruvian producers. The Consortium became effective on February 15, 1961, and set up quarterly export quotas for 1961 as follows: first quarter, 200,000 tons; second quarter, 140,000 tons; third quarter, 90,000 tons; and fourth quarter, 170,000 tons.

As a service to the members of the Consortium, a Boletin Informativo is being issued reviewing fish meal prices, market conditions, sales, and other information of value. The following review of fish meal prices and sales in the European market and United States markets were included in the March 15, April 15, and April 30, 1961, issues of the Boletin Informativo.

During February-April 1961, f.o.b. prices for Peruvian fish meal advanced from about US$70.00 to about $90.00 a short ton for shipments both to European and United States markets.

When the Consortium began operations, there were offers of only $90 c.& f. a metric ton or $81.65 a short ton c.& f.; al-

Peru (Contd.):

Table 1 - Peruvian Fish Meal Prices, February 14-April 15, 1961

Period and Destination	Unit	Price Range in US$			
		Opening	Highest	Lowest	Closing
Flat Market Prices 1/:					
United States East Coast Shipments:					
March 16-April 15	short ton c.&f.	N	N	N	N
February 14-March 15	" " "	92.08	92.08	92.08	92.08
" " "	short ton f.o.b. 3/	71.67	71.67	71.67	71.67
European Shipments:					
March 16-April 15	short ton c.& f.	92.53	92.53	92.53	92.53
" " " "	short ton f.o.b. 3/	73.48	73.48	73.48	73.48
February 14-March 15	short ton c.& f.	86.18	92.53	86.18	92.53
" " " "	short ton f.o.b. 3/	67.13	73.48	67.13	73.48
Protein Market Prices 2/:					
United States West Coast Shipments:					
March 16-April 15	protein unit c.& f.	1.497	1.497	1.497	1.497
" " " "	short ton c.& f.	97.30	97.30	97.30	97.30
" " " "	short ton f.o.b. 3/	70.99	70.99	70.99	70.99
February 14-March 15	protein unit c.& f.	1.433	1.497	1.433	1.497
" " " "	short ton c.& f.	93.15	97.30	93.15	97.30
" " " "	short ton f.o.b. 3/	66.84	70.99	66.84	70.99
European Shipments:					
March 16-April 15	protein unit c.& f.	N	N	N	N
February 14-March 15	protein unit c.& f.	1.325	1.475	1.325	1.475
" " " "	short ton c.& f.	86.13	95.88	86.13	95.88
" " " "	short ton f.o.b. 3/	67.08	76.83	67.08	76.83

"N" - No sales.

1/ "Flat" market is for sales made with a guaranteed minimum of protein (usually 65 percent). Any excess of protein is to the buyer's advantage. The most important flat markets for Peruvian fish meal are the east (including Gulf of Mexico) coast of the United States and West Germany.

2/ "Protein" market is based on the price per unit of protein and buyers must pay for any excess protein found by laboratory analysis of shipments on arrival. The most important market on this basis is the west coast of the United States.

3/ The Boletin Informativo showed prices in metric tons c.& f. F.o.b. prices were calculated by subtracting US$19.05 a short ton (equal to $21.00 a metric ton) for cost of freight to Europe, $26.31 a short ton (equal to $29.00 a metric ton) for freight to the United States west coast, and $20.41 a short ton (equal to $22.50 a metric ton) for freight to U. S. Gulf of Mexico ports. Prices per unit converted to prices per short ton on basis of 65 percent protein meal.

Table 2 - Peruvian Fish Meal Prices, April 16-April 30, 1961

Destination and Type of Meal	Unit	Price Range in US$			
		Opening	Highest	Lowest	Closing
Flat Market Prices 1/:					
United States Shipments	short ton c.& f.	N	N	N	N
European Shipments:					
Anchovy meal (regular)	short ton c.& f.	96.16	111.13	96.16	109.77
" " "	short ton f.o.b. 3/	77.11	92.08	77.11	90.72
Anchovy meal (steam-dried)	short ton c.& f.	124.74	124.74	124.74	124.74
" " " "	short ton f.o.b. 3/	105.69	105.69	105.69	105.69
Bonito meal	short ton c.& f.	88.91	100.70	88.91	100.70
" "	short ton f.o.b. 3/	69.86	81.65	69.86	81.65
Protein Market Prices 2/:					
United States Shipments:	protein unit c.& f.	1.796	1.796	1.796	1.796
" " "	short ton c.& f.	116.74	116.74	116.74	116.74
" " "	short ton f.o.b. 3/	90.43	90.43	90.43	90.43
European Shipments	short ton c.& f.	N	N	N	N

For footnotes see table 1.

Peru (Contd.):

so that it was not considered desirable to sell at the maximum price for June of $100 a metric ton or $90.72 a short ton c.& f., since the average price at the end of the February 15-March 15 period was $102 a metric ton or $92.53 a short ton c.& f.

A representative of the Consortium provided the following information about prices between April 21 and the close of the month: The c.& f. price for shipments to Europe was $121 a metric ton. Since freight to Europe is $21 a metric ton, the f.o.b. price would be $100 a metric ton or $90.72 a short ton. The Consortium made some sales at $132 c.& f. Belfast. Since the freight rate to that point is $28, the f.o.b. price would be $104 a metric ton or $94.35 a short ton. The higher price for the Belfast sales was because it was steam-dried fish meal which sells at a premium. On May 10 the price for the regular meal was $100 a metric ton or $90.72 a short ton f.o.b. Peruvian ports, and for shipment to the U. S. west coast the price was $1.98 per unit of protein c.& f., or $90.45 a short ton for 65 percent meal.

Table 3 - Peruvian Fish Meal Sales1/, Feb. 14-April 30, 1961

	April 16-30	Mar. 16-April 15	Feb. 14-Mar. 15	Total
	(Metric Tons)			
Flat Market Sales:				
To U. S.	N	N	700	700
To Europe	7,087	200	13,400	20,687
Protein Market Sales:				
To U. S.	200	1,100	7,300	8,600
To Europe	N	N	5,200	5,200
Total	7,287	1,300	26,600	35,187

1/Exclusive of future contracts made prior to February 15, 1961.
"N" - No sales.

On the basis of payment on the actual protein content, the metric ton price to the United States west coast for the period March to June ranged from $1.58 to $1.65 per unit of protein c.& f., and for shipment to Europe the price ranged from $1.48 to $1.55 per unit of protein c.& f.

The Consortium received more than 200 firm buying proposals, of which 73 were approved as of mid-May and contracts have been closed for 26,600 metric tons between March and June, with a sales value of about $2.5 million. These sales represented the total of producers' offerings for sale during that period.

The Consortium contracted for freight rates outside Conference rates at $20.50 to Europe, $22.50 to the United States Gulf of Mexico coast, and $28-$30 to the United States west coast. But it was reported that the Conference decided upon the rate of $21.00 to Europe until further notice.

The Executive Committee of the Consortium on March 27 decided to reduce to 1 percent the broker's commission for sales to the United States.

At a meeting in Paris in September 1960, of the representatives of fish meal manufacturers of the five leading fish meal exporting countries, it was agreed that the total exports by the five countries would be a maximum of one million tons for 1961. The agreement was signed on October 1, 1960. Peru was allotted the annual export quota of 600,000 or 60 percent of the total. The Peruvian Government subsequently ratified this agreement by a Supreme Decree of December 16, 1960. (United States Embassy, Lima, May 15, and May 18, 1961.)

Poland

NEW FIVE-YEAR PLAN FOR FISHING INDUSTRY:

Poland is planning to extend the operations of her deep-sea fishing vessels to grounds of the north and central Atlantic, as part of her latest Five-Year Plan for the fishing industry.

The plan also provides for the employment of 7,000 more men in the fisheries during the next five years, over 4,000 of them on land, and the extension of the fisheries training school at Gdynia to teach potential deep-sea captains and future masters of factory-trawlers. A midwater trawl is to be used for catching herring.

Details of this latest Polish plan are given in Polish Maritime News, which recalls that during the last Five-Year Plan, for 1956-60, the Polish fisheries economy recorded considerable rises in fish landings. These totaled 167,700 metric tons in 1960, exceeding the plan by 12,000 tons.

The new Five-Year Plan, for 1961-65, aims at these landings; 1961--173,000 tons; 1962--181,500 tons; 1963--205,200 tons; 1964--235,000 tons; 1965--270,000 tons. Thus the landings fixed for 1965 are greater by 102,300 tons than those in 1960.

This rapid rise is based on the assumption that Polish shipyards are to build 13 factory-trawlers, 6 freezing-trawlers, 28 motor trawlers, 1 steam trawler, 36 79-foot and 20 56-foot cutters.

Improved supplies of fish products on the home market are expected to cut down imports of fish. In 1960 a total of 19,600 tons of fish and fish conserves were imported against only 6,500 tons exported.

Imports in 1965, it is claimed, will be limited to 5,000 tons of herring. "The value of the 10,500 tons of fish and conserves to be exported will be seven times greater than the total value of the imports," says the paper. It also declares that the value of the fishing industry's products will rise in 1965 by 72.2 percent as compared with 1960.

It is assumed that up to 1965 the state-owned fisheries flotilla will require 100 new captains, 213 navigators, 55 radio officers, 217 engineers, 20 chief stewards, and 20 fish-processing technicians.

Poland (Contd.):

The first course at the Gdynia training school is being attended by 26 experienced captains of fishing vessels.

There is also a steady flow of graduates from the Deep-Sea Fisheries School, and various courses for training ship's officers and a second sea fisheries school is foreseen.

Fishing technique is to be improved by adopting midwater trawls on the cutters and drifter-trawlers when fishing for sprats and herring. "Detachable fish-bags" are being adopted this year with trawls and midwater trawls on the Baltic and North Sea fishing grounds, also along the West African coast.

The paper declares that in February 1961, during four days of fishing on the grounds off the SW. Norwegian coast, a 79-foot cutter caught about 75 tons of herring by mid-water trawls. It says the catch average per hour was five times higher than when using the traditional trawl.

Machines for the manufacture of scale ice and for the icing up of boxes to be shipped inland are also to be set up this year, and three firms will soon receive home-made machines for ice.

Plans for the processing industry are also being extended, involving the production of fish conserves reaching 19,900 tons in 1965, against 10,800 tons in 1960. In view of the planned rise in landings of fresh and frozen fish by about 50 percent, and the rapid increase in the manufacture of fillets on the factory-trawlers--16,000 tons in 1965--the rebuilding of refrigerated stores has become urgent. Seven fish refrigeration stores are to be built in various centers by 1966. (The Fishing News, May 12, 1961.)

Portugal

CANNED FISH PACK, JANUARY-MARCH 1961:

Portugal's total pack of canned fish in oil or sauce for the first quarter of 1961 amounted to 3,738 metric tons. The sardine pack and the anchovy fillet pack combined accounted for 91.8 percent of the total pack.

Portuguese Canned Fish Exports, January-March 1960-1961

Product	January-March 1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	1,715	90	2,301	121
Chinchards	17	1	11	1
Mackerel	32	1	2	-
Tuna and tunalike	178	6	543	19
Anchovy fillets	1,718	172	1,387	138
Others	78	4	148	8
Total	3,738	274	4,392	287

The pack in 1961 was substantially less than in the first quarter of 1960 due to a sharp drop in sardines offset slightly by an increase in anchovy. There was also a sharp drop in the pack of tuna in the early part of 1961. (Conservas de Peixe, May 1961.)

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CANNED FISH EXPORTS, JANUARY-MARCH 1961:

Portugal's exports of canned fish during the first quarter of 1961 amounted to 16,468 metric tons, only slightly less than in the same period of 1960. Sardines accounted for 83.5 percent of the 1961 exports, followed by anchovy fillets with 10.2 percent.

Portuguese Canned Fish Exports, January-March 1960-1961

Product	January-March 1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
Sardines	13,753	723	14,287	752
Chinchards	277	14	244	13
Mackerel	95	4	58	3
Tuna and tunalike	570	20	456	13
Anchovy fillets	1,685	169	1,203	120
Others	88	4	436	23
Total	16,468	934	16,684	924

Portugal's principal canned fish buyers in the first quarter of 1961 were Germany with 3,060 tons, followed by the United States with 2,192 tons, and Great Britain with 2,151 tons. (Conservas de Peixe, May 1961.)

Senegal

1960/61 TUNA FISHING SEASON:

The Senegalese 1960/61 tuna fishing season began November 1, 1960, and came to a close April 30, 1961, one month behind schedule. The catch was still almost 6,000 metric tons short of the 13,500 tons expected from the season's operations. Also, the Senegalese partially committed themselves by agreement

Senegal (Contd.):

to catch that amount for French and other markets.

The 1960/61 season was a discouraging one for Senegal because of the scarcity of tuna in local waters, and some of the vessels were compelled to travel as far as the Ivory Coast for their catch. Further adversity occurred on March 10 when 18 vessels, or more than a third, abandoned the fleet and returned to their home ports.

Fresh and Frozen Tuna Landings at Dakar, Senegal, November 1960-April 1961

Type	Fleet	Quantity
		Metric Tons
Frozen tuna	French	2,660
	Senegalese	710
Total frozen		3,370
Fresh tuna	French	4,488
	Spanish	2,918
	Senegalese	162
Total fresh		7,568
Total fresh and frozen		10,938

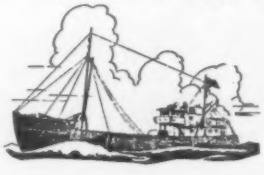
The number of vessels engaged in the Senegalese tuna fishing season from November 1960 through April 1961 ranged from a low of 31 vessels in November to a high of 50 vessels during January. Of this number, an average of about 10 vessels a month operated as freezer-fishing vessels (principally French and 1 or 2 Sengalese). In addition, Spanish, other French vessels, and one Senegales vessel accounted for most of the fresh tuna catch for the season.

The season's tuna landings were utilized as follows: 6,300 tons were canned for export to the French market, and 400 tons were shipped to outside markets. If the French commitment is to be met, an additional 3,700 tons would have to be shipped to the French market, and 3,100 tons for export to other markets.

At the start of the fishing season, France had agreed to purchase 10,000 tons of canned tuna from Senegal, and 3,500 additional tons were to be exported to markets outside the franc area. The poor season, however, resulted in most of the canned tuna being exported to France where a high guaranteed price is paid, but commitments to other export markets could not be filled.

In order to fulfill its commitments, the Government of Senegal was seeking to purchase tuna from other suppliers than the French, who were then returning home for the start of their season. France agreed to this, and to provide the necessary dollars, but only under the condition that the canned tuna be shipped entirely outside the franc area. At that time it appeared as if several Spanish clippers would be obtained to provide 500-600 tons of tuna. The remainder of the more than 2,000 tons to be exported could be purchased from the Japanese, although the Senegalese are extremely hesitant about taking such action. But it was believed, too, that the Japanese may not be overly anxious to make sales to Senegal.

Senegal is already looking about for a solution to its problem for the next season. The primary requirement, in the eyes of the Government, is to create a Senegalese fleet. This would be done by inducing French or Spanish vessels to transfer registration to Senegal, and by forming a joint public-private company to purchase additional clippers. Continued emphasis is reportedly placed upon export markets, so as to free the Senegalese from dependence upon France. (United States Embassy, Dakar, May 29, 1961.)



South-West Africa

TUNA FISHING WITH LONG-LINE TESTED:

Early this year, the initiative of two Walvis Bay fishing industrialists has resulted in the first local attempts to catch tuna off the South-West African coast using the Japanese long-line method. Tests of this method followed the encouraging results in Union of South African waters where research into the Japanese long-line method was started by the Division of Fisheries vessel Kunene and by the commercial motor trawler Cape Point.

Two Walvis Bay pilchard fishing boats, the Karimona and the Curlew, were equipped with line haulers and with other long-line gear. In a trip lasting six days, they fished successfully about 120 to 180 miles northwest of Walvis in 1,000 to 1,200 fathoms of water. The average surface temperature of the water was 17 to 18° C. (62.6-64.4° F.)

Two to three miles of lines were fished with the baited lines hung 20 fathoms apart. The depth fished was 15 to 20 fathoms. With this test gear, about 100 tuna were caught--bluefin, yellowfin, and albacore--weighing from 20 to 300 lbs. In addition, two blue marlins were taken. The results are considered to be encouraging and have shown that tuna is readily available in South-West African waters. (The South African Shipping News and Fishing Industry Review, April 1961.)

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MORE RUSSIAN FISHING VESSELS OFF COAST:

The total of Russian fishing and transport vessels identified off the coast of South-West Africa has now moved up to nine. In addition to the research trawler Muksun, the stern trawlers Radichev, Izumrud, and Taras Schewtchenko, and the larger vessel Atiubinsk seen in February 1961, two more stern trawlers, the Marmin Siberyk and the Tchernychewsky, have been seen in company with a tanker and a supply ship.

According to a report in the Namib Times, the previously identified trawlers were sighted about the middle of March about 65 miles west of Pelican Point. In addition, the Tchernychewsky was seen taking fuel from a 7,000-ton tanker. The supply ship Provorny was lying about 500 yards away from the trawler and tanker.

Interest in this Russian venture into Southern African fishing waters flared early in April when it was announced from Moscow that a Soviet scientific expedition ship had found a huge rich fishing ground "off the Cape of Good Hope." This ship, presumably the Muksun, located an area estimated at 6,000 square miles packed with fish, particularly mackerel and sardines. According to the report, which was given out by Moscow radio, a fleet of refrigerated ships had been sent to the area and one trawler was catching 70 to 80 tons a day.

By early April, however, no Russian ships had been sighted in Union of South Africa Cape waters. The Moscow report, therefore, may well refer to the Kaliningrad fleet operating off South-West Africa.

There seems little doubt that the Soviet vessels are in African waters primarily to exploit the rich fishing resources. Expensive factory trawlers, each costing R2,000,000 (US$2.8 million) are being used. (The South African Shipping News and Fishing Industry Review, April 1961.)

Spain

PRODUCERS HOPE FOR HIGHER IMPORT DUTIES ON FISH MEAL:

Fish meal manufacturers in Spain's Canary Islands are expressing the hope that higher import duties against foreign fish meal will be recommended by the Customs Board now studying proposals for changes in Spain's tariff.

The Government has issued a decree extending for six months (until December 1961) the period for revising the customs tariff, which went into effect in June 1960. The Tariff Law of May 1, 1960, provided that the Government could make a one-time revision of the tariff within one year after it became effective. The apparent reason for the extension was that there had not been sufficient time to study the many requests received from interested parties, domestic and foreign, for tariff revisions.

It has been pointed out that imports of fish meal into Spain totaled 66,452 metric tons in 1960 as compared with only 886 tons in 1958 and 20,081 tons in 1959. Present production in the Canary Islands approximates 80 percent of Spain's total requirements of fish meal. The press reports plans for the expansion of production in the Canaries with the goal of fully meeting Spain's requirements. (United States Embassy, Madrid, June 2, 1961.)

Sweden

FUTURE OF HERRING FISHERY OFF ICELAND UNCERTAIN:

The future of Swedish herring fishing off Iceland is in an uncertain stage. In 1960 par-

Sweden (Contd.):

ticipation was limited to only 11 of the 23 vessels which had announced their intention to take part. With this in mind, the Swedish Government has declared that if the participation is equally bad this year, the patrol vessel will be redirected to the Fladen fishing grounds in the North Sea.

The lack of interest displayed by Swedish fishermen in herring fishing off Iceland is attributed by the chairman of the Swedish Icelandic Fishing Association to (1) late fixing of prices; (2) freight rates which made cargo-carrying more attractive than fishing; (3) change in ownership of a number of vessels, etc. In addition there is the difficult problem of manning the fishing vessels. This grows out of the circumstance that income from fishing has not kept pace with earnings ashore.

Finally, there is the problem arising out of the size of the new fishing vessels. They have become too big for Icelandic fishing in the opinion of the Association official. By way of explanation he says that a good catch is one of between 800-900 barrels. The new fishing vessels, however, can carry about 1,300 barrels and it is extremely seldom that a catch is that large.

A positive factor, which encourages the Association official to feel that Icelandic herring fishing will continue despite the handicaps, is the relatively large demand for Icelandic herring. Yearly imports total 125,000-150,000 barrels. The canning factories and the salted herring trade never buy less than 100,000 barrels a year, the United States Consulate in Goteborg reported on May 23, 1961.

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MINIMUM EX-VESSEL PRICES FOR COD INCREASED:

In order to stimulate fishing for cod, the Swedish Board of Agriculture decided to increase the minimum prices for cod landed on the Swedish south coast during the period July 1-December 31, 1961.

Prior to that period, the minimum price was 0.59 crowns per kilo (5.2 U. S. cents a pound) for skinned cod with head on and with a length of 50 centimeters (19.7 inches) or more, and 0.56 crowns per kilo (4.9 U. S. cents a pound) for skinned cod with head on and with a length of between 35 and 49 centimeters (13.8-19.3 inches). For unskinned cod the minimum price for the larger type was 0.51 crowns per kilo (4.5 cents a pound) and for the smaller type the minimum price was 0.48 crowns per kilo (4.2 cents a pound). For this type of cod the minimum price increased by 0.04 crowns per kilo (0.35 cents a pound).

For skinned cod without head and with a length of at least 40 centimeters, the minimum price was 0.84 crowns per kilo (7.4 cents a pound), whereas for skinned cod without head and under 40 centimeters (15.7 inches) in length the minimum price was 0.74 crowns per kilo (6.5 cents a pound). The price increase for this type of cod was 0.06 crowns per kilo (0.5 cents a pound) based on the new prices.

An official of the West Coast Central Association stated that the increase in the minimum prices for cod must be considered as an effort to reduce the surplus of herring that normally is landed during the months of August and September. He thought, however, that the increase in price is too small to encourage west coast fishermen to change over from herring fishing to cod fishing. It may, on the other hand, be sufficient to encourage some south coast fishermen to remain with cod fishing rather than turning to salmon at that time of the year. (United States Consulate, Goteborg, May 18, 1961.)

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MARINE OIL SUPPLY AND FOREIGN TRADE:

Sweden's total supply of marine oils was expected to increase in marketing year

Table 1 - Sweden's Supply and Utilization of Marine Oils for Marketing Years (Ending June 30) 1959/60-1960/61

Item	Estimated 1960/61				1959/60			
	Whale Oil Crude	Fish Oil Crude[1]	Other Marine Oil[2]	Total	Whale Oil Crude	Herring Oil Crude	Other Marine Oil[2]	Total
	(Metric Tons)							
Opening stocks, July 1	1,400	4,100	7,900	13,400	1,300	3,700	11,000	16,000
Production	-	1,500	-	1,500	-	1,500	-	1,500
Imports	3,000	7,000	30,000	40,000	1,564	5,846	25,287	32,697
Total Supply & Utilization	4,400	12,600	37,900	54,900	2,864	11,046	36,287	50,197
Exports	-	3,000	7,000	10,000	-	2,698	6,297	8,995
Utilization:								
Food	3/	3/	3/	28,000	3/	3/	3/	27,126
Other	3/	3/	3/	900	3/	3/	3/	676
Ending stocks, June 30	1,000	3,000	12,000	16,000	1,400	4,100	7,900	13,400

1/Mostly herring oil. 2/Mainly refined whale and herring oil. 3/Not available.

Sweden (Contd.):

Table 2 - Sweden's Foreign Trade in Marine Oils, July 1959-December 1960

Item	Imports			Exports		
	July-Dec. 1960	Jan.-June 1960	July-Dec. 1959	July-Dec. 1960	Jan.-June 1960	July-Dec. 1959
	(Metric Tons)					
Whale oil, raw	7,467	1,565	-	-	-	-
Sperm oil, raw	88	71	90	-	-	-
Seal oil, raw	4	22	4	-	-	-
Herring oil, raw	1,232	3,974	1,903	1,302	966	1,732
Vitamin oil products	27	1/13	40	-	-	-
Fish-liver oil, etc.	784	1/395	899	-	-	-
Other marine oils	14,682	9,487	15,058	1/18	1/1	5
Hydrogenated marine oil, including refined	334	377	180	3,499	4,167	2,125
Total	24,618	15,904	18,174	4,819	5,134	3,862

1/Not reported in table 3.

Table 3 - Sweden's Imports of Marine Fats and Oils by Country of Origin, Calendar Year 1959-1960 1/

Product and Country of Origin	1960	1959
	(Metric Tons)	
Whale Oil, Raw:		
Holland	-	956
Norway	4	5,102
Japan	9,028	-
Total	9,032	6,058
Sperm Oil, Raw:		
Norway	66	100
Great Britain	92	54
West Germany	1	1/
Total	159	154
Seal Oil, Raw:		
Norway	24	17
Denmark	2	3
Total	26	20
Herring Oil, Raw:		
Norway	72	92
West Germany	2,384	3,755
Denmark	1,204	763
Iceland	1,546	1,647
Total	5,206	6,257
Highly Vitaminized Oil Products:		
Norway	12	16
Japan	12	52
France	3	-
Total	27	68
Medical & Veterinary Fish-Liver Oil:		
Norway	710	752
Iceland	-	37
West Germany	-	54
Denmark	65	91
Japan	9	-
Total	784	934
Fats & Oils, Fish & Marine, Other (also Refined):		
United States	17,645	16,927
Norway	809	754
West Germany	4,787	3,112
Peru	522	488
Denmark	374	48
Iceland	22	-
Belgium	0	-
Great Britain	5	-
Japan	5	-
Total	24,169	21,329
Hydrogenated Marine Fats & Oils, also Refined, but not Otherwise Prepared:		
Norway	706	407
Denmark	2	55
Great Britain	3	-
Total	711	463
Grand Total	40,114	35,283

1/Table does not include 13 tons of vitamin oil products and 395 tons of fish-liver oil, etc., imported in early half of 1960 as shown in table 2.

1960/61 (ending June 30, 1961) as compared with marketing year 1959/60. Production will remain constant during that period, but imports, utilization, and exports should increase in 1960/61 (table 1).

Sweden's total imports of marine oils amounted to 18,174 metric tons during the last 6 months of 1959. During the first 6 months of 1960 they decreased to 15,904 tons, but increased sharply in the last half of 1960 to 24,618 tons due mainly to increased raw whale oil imports. Exports of marine oils from Sweden are not as impor-

Table 4 - Sweden's Exports of Marine Fats and Oils by Country of Destination, Calendar Years 1959-60 1/

Product and Destination	1960	1959
	(Metric Tons)	
Herring Oil, Raw:		
Norway	1,659	1,852
W. Germany	451	315
Denmark	1/	513
Austria	16	10
Italy	91	32
Holland	51	-
Total	2,268	2,722
Hydrogenated Marine Fats & Oils, also Refined, but not Otherwise Prepared:		
Finland	182	440
France	791	744
Morocco	714	479
Jamaica	1,378	1,106
Switzerland	226	113
Iran	15	35
French Antilles	161	119
British Guiana	173	162
Austria	579	342
Norway	224	8
Denmark	817	357
Great Britain	2,117	20
West Germany	-	72
Italy	-	55
Soviet Union	-	1,000
Spain	-	49
Czechoslovakia	100	140
Trinidad	180	-
Haiti	9	-
Total	7,666	5,241
Grand Total	9,934	7,963

1/Does not include a small quantity of "other marine oils" shown in table 2.

Sweden (Contd.):

tant, but increased slightly in the first half of 1960, due to increased shipments of hydrogenated marine oil (table 2).

The United States was Sweden's leading supplier of marine oils in 1959 and 1960. Japan was the second most important source of marine oils in 1960 due to her large shipments of raw whale oil to Sweden. In 1960, imports of raw whale oil from Norway fell drastically. Imports from West Germany of fish, marine animal, and other fats and oils increased in 1960 as against 1959, but imports of raw herring oil decreased (table 3).

Sweden's exports of marine oils increased from 7,963 tons in calendar year 1959 to 9,934 tons in 1960. Exports consisted mainly of hydrogenated marine fats and oils (sent mostly to Great Britain and Jamaica) and herring oil (most of which was sent to Norway)--see table 4.

Table 5 - Sweden's Utilization of Marine Oils for Food, Year Ending June 30, 1960

Use	Metric Tons
Table Margarine1/:	
Not hydrogenized	156
Hydrogenized	20,595
Total	20,751
Bakery Shortening:	
With animal fat	1,767
With vegetable fat	4,225
Total	5,992
Total Margarine and Shortening	26,743
Baking Aids:	
11-24 percent fat	19
25-60 " "	193
Over 60 " "	48
Fat Emulsion:	
Cream substitute	11
100-Percent Fat:	
Coconut oil	2/
Artificial lard, etc.	80
Other products	32
Grand Total	27,126

1/Including the margarine part in so-called "restaurant mixture."
2/Less than one ton.

In April 1961, f.o.b. export prices of marine oils in Sweden ranged from £71 10s. per long ton (8.93 U. S. cents a pound) for crude hydrogenated oil, to £75 a ton (9.37 cents a pound) for refined hydrogenated oil, £38 10s. a ton (4.81 cents a pound) for distilled oil, and £45 10s. (5.68 cents a pound) for distilled hydrogenated oil. (U. S. Foreign Agricultural Service Report, Stockholm, April 14, 1961.)

Note: See Commercial Fisheries Review, August 1960 p. 71.

Taiwan

GOVERNMENT PROMOTING EXPANSION OF FISHERIES:

Under the program titled "Plan to Develop High Seas Fishery" (part of a Four-Year Economic Plan), the Taiwan Government has actively helped finance the construction of fishing vessels, development of new fishing grounds, establishment of overseas bases, and the repair of port facilities. This Government aid to different segments of the fishing industry has resulted in a tremendous expansion of the fisheries in the last few years.

The catch of the distant-water fishery in 1960, which totaled 85,210 metric tons, increased 94 percent over the 1956 catch of 43,988 metric tons. The number of fishing vessels engaged in the distant-water fishery in 1960 totaled 366 (total of 36,532 gross tons). This was an increase of 162 vessels (total of 18,613 gross tons) over 1956.

Production of the distant-water fishery was boosted by 15,000 tons in 1960 as a result of Government financial aid provided in 1959 to construct 30 130-ton trawlers, which could also be used for pole-and-line fishing, and six distant-water vessels. This aid was provided to fishermen under the "Plan to Develop High Seas Resources."

As of mid-1961, Taiwan was constructing four large tuna vessels of 250 tons each and two 550-ton tuna vessels. The latter two large tuna vessels are scheduled to be sent to the Atlantic Ocean. Taiwan is also planning to construct a research vessel of 700 tons.

Taiwan sent out research vessels in 1959 to the waters off Viet Nam, Malaya, and North Borneo to locate new fishing grounds. Good bottom fishing grounds were discovered off Viet Nam, as well as off Formosa, to which large vessels were immediately dispatched.

As far as overseas bases and overseas operations are concerned, a supply base (for fueling and repairing vessels) has been established at Singapore. In 1960, one vessel of 350 tons was sent to the Atlantic Ocean off West Africa to fish on an experimental basis. This vessel landed 450 tons of fish (presumably tuna) in six months, and Taiwan plans to send another vessel of this size to West Africa this year.

The catch of the adjacent-seas fishery in 1960 amounted to 94,856 metric tons, an in-

Taiwan (Contd.):

crease of 49 percent over the 1956 catch (63,663 metric tons). In 1960 the vessels engaged in this fishery numbered 5,092 (total of 41,326 gross tons). This was an increase of 281 vessels (total of 13,632 gross tons) over 1956, and the Taiwan Government will be subsidizing the construction of 45 vessels in the 30- to 50-ton class and 12 purse-seine vessels in the 25-ton class under the "Plan to Develop High Seas Resources."

Purse-seine vessels contributed the largest amount of the catch of the adjacent-seas fishery in 1960. The pole-and-line tuna vessels produced less tuna in 1960 than in 1959 since their operations were curtailed to some extent due to the dispute with the Philippine Government over territorial waters. Taiwan fishermen are hoping for a quick settlement of the dispute. (Suisan Keizai Shimbun, June 11, 1961.)

Note: Also see Commercial Fisheries Review, April 1961 p. 85; correction: In that issue, the landings shown for "deep sea fisheries" in the table should have been "85,210" instead of 85,310 metric tons.

Union of South Africa

FROZEN TUNA IS EXPORTED FOR FIRST TIME:

The development of a South African tuna fishing industry has taken another step forward by three large fishing concerns working in cooperation with a fishery products export and equipment supply house. Early in 1961, about 100 short tons of frozen tuna, caught by long-line from Union of South Africa boats normally engaged in pilchard fishing, were exported to the United States and Italy.

Initial efforts to assess the potential of the tuna resources off the Cape coast and to attempt to catch the fish by the Japanese long-line method were started last year by the Union's Division of Fisheries and by the South African Museum. The Division of Fisheries has been using the 70-ft. long research vessel Kunene northwest of Slangkop; the South African Museum has had the use of a commercial 70-ft. motor trawler Cape Point. Although both vessels have done their fishing on a comparatively small scale, they have taken some outstanding catches. And, during the 1960 closed season for pelagic shoal fishing, the Kunene took some of the pilchard boat skippers to sea so that they could gain practical long-lining experience.

In September-October 1960 the first commercial attempts at long-line fishing were made and then in November three large fishing concerns placed 6 to 7 vessels in a larger-scale commercial project based on Hout Bay. The long-line gear--synthetic fiber line, hooks, and line haulers--was supplied by a company which had previously supplied gear for the Cape Point. The United States parent company of that firm was among the pioneers of the tuna import-export trade and, through its world-wide network of associate companies, the local company was able to find a ready market for South African frozen tuna.

The boats engaged in long-lining off the Cape are typical pilchard vessels fitted with long-line haulers. They have been using about 30 baskets each about 300 yards long with six hooks to a basket. Each boat is out for 18 to 20 hours and the line is laid and taken in usually three times during that period.

Fish are gutted and bled aboard the vessel and, on landing, the head and fins are cut off. After freezing, the fish are stored for a short period and then glazed ready for shipment at temperatures between 0° and 5° F. in the refrigerated holds of ships destined for the United States or Italy.

Although the shipping of frozen tuna is generally done with the fish unwrapped, Italy's shipping requirements have obliged the exporters to wrap each fish in a stockinette or hessian covering. Exports to Italy and America bring about £100 (US$280) a short ton and the fish is used in those countries for canning.

The firms carrying out these larger-scale tests of a commercial tuna fishery are reported to be planning further developments in the future, and the useful initial work of the research vessels may lead eventually to the establishment of a substantial tuna industry in the Cape. (The South African Shipping News and Fishing Industry Review, April 1961.)

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PILCHARD-MAASBANKER FISHERY, JANUARY-FEBRUARY 1961:

The Union of South Africa Cape west coast pilchard-maasbanker fishery for the first two months of the 1961 season yielded 163,930 short tons pilchards, 7,735 tons maasbanker (jack mackerel), and 8,756 tons mackerel. The total catch was 180,421 tons.

Union of South Africa--Products Produced from Pilchard-Maasbanker Fishery Landings, January-February 1961

Fish Meal	Fish Oil	Canned		
		Pilchards	Maasbanker	Mackerel
Short Tons	Imp. Gals.	(1,000 Lbs.)		
36,320	3,225,841	8,020	1,953	2,933

The February catch comprised a record 94,051 tons pilchards, 990 tons maasbanker, and 4,935 tons mackerel. These figures compare with 19,609 tons pilchards, 13,037 tons maasbanker, and 17,728 tons mackerel in February last year; and with 26,443 tons pilchards and 9,588 tons mackerel in February 1959.

The February catch this year yielded 19,034 short tons fish meal, 1,883,381 Imperial gallons fish body oil, 5,708,048 pounds canned pilchards, 189,888 pounds canned maasbanker, and 2,113,656 pounds canned mackerel. (The South African Shipping News and Fishing Industry Review, April 1961.)

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PILCHARD-MAASBANKER FISHERIES TRENDS, APRIL 1961:

The Union of South Africa's fishing season, which opened on January 1, 1961, was off to a record start, according to the statis-

Union of South Africa (Contd.):

tics on landings of pilchard, maasbanker, and mackerel during the first quarter of 1961. Landings of those species for the quarter totaled 246,622 short tons. Raw fish intake at the factories for the first quarter of 1960 totaled 169,533 short tons. With the April landings expected to reach 80,000 short tons and the season due to run until July 31, the prospects are that the Union fishery will set a new record for this year. The record 1960 pilchard, maasbanker, mackerel catch totaled 453,387 short tons. (United States Embassy, Pretoria, May 17, 1961.)

U.S.S.R.

EXPANSION OF FISHING FLEET CONTINUES:

At the Admiraltskij Zavod shipyard in Leningrad there is being built a second large fish-canning factoryship for the Far East, according to the April 20, 1961, issue of Leningradskaja Pravda. The vessel has been given the name Pavel Tsjebotnajagin.

The Esthonian fleet has taken over a new large fast trawler of 3,800 tons displacement, 87 meters (285.4 feet) long with a beam of 14 meters (45.9 feet). According to Vodny J Transport of April 25, it was to leave soon for the Newfoundland Banks together with the motherships Johannes Vares and Jan Anvelt. Somewhat later the new freezer vessel Sovjetskaja Rossija was to depart.

The Baltijskij Zavod in Leningrad has begun the building of a series of large freezer trawlers of the Krylov and Ljudas Gira type. This type has modern equipment with large freezing capacity and also equipment for the manufacture of canned products, fish meal and oil. The crew is 4½ times larger than for medium trawlers, according to Sovjetskaja Litva for April 20. (Fiskets Gang, May 18, 1961, a Norwegian fishery periodical.)

United Arab Republic

REGULATIONS GOVERNING FREEZING AND EXPORT OF SHRIMP:

There are no laws or regulations presently in force in the United Arab Republic regarding sanitary requirements applicable to the culture, harvesting, or processing of various species of shellfish.

The only fishery product covered by regulations within the United Arab Republic appears to be shrimp, the freezing and processing of which is governed by the Republics Departmental Order No. 271 issued in 1958 by the Ministry of Industry.

The Departmental Order as published in the Egyptian Official Journal No. 62, dated August 11, 1958, listed the following regulations:

"Specifications of Frozen Shrimps:

"I - Frozen shrimps are fresh shrimps fit for food consumption which are exposed to such a degree of cold temperature as to cause the freezing of all the liquids they contain.

"II - Shrimps intended for freezing must be fresh and have preserved their natural properties. Care must be taken, immediately after they are fished, to have them kept in ice or in mechanically refrigerated rooms at a temperature not exceeding 0° Centigrade so as not to expose them to damage.

"III - The freezing of shrimps must take place between -4° C. and -17.7° C. (24.8° F. and 0° F.) and the storing and shipping of frozen shrimps be in refrigerators the temperature of which does not exceed -15° C. (5° F.). Exporters must give evidence that shipments are effected at this temperature.

"IV - Frozen shrimps for exportation must be graded according to size and wrapped in paper impervious to humidity and packed in containers made of wax carton. Frozen shrimps also may be covered with a thin layer of ice and placed in boxes covered with wax paper impervious to humidity and susceptible of sealing by heat.

"V - The containers must bear the name of the factory, that of the product (frozen shrimps), the net weight, and the name and percentage of added substances, if any. To make easy transportation, the containers of frozen shrimps must be placed in larger boxes made of reinforced cardboard or in wooden cases." (United States Embassy, Cairo, May 17, 1961.)

United Kingdom

WHOLESALE FIRM PREDICTS CONTINUED BIG DEMAND FOR FRESH FISH:

"Frozen fish is not a substitute for fresh fish, and never will be," remarked a spokesman of a prominent London, England, wholesale fish firm in an address at a dinner meeting in April 1961. The reference was prompted by a work stoppage at Grimsby and Hull where skippers objected to Icelandic boats landing fish, which resulted in a scarcity of fresh fish.

The speaker went on to say that in the last year or so there had been comments that the fish trade was in the doldrums, and that his firm's policy to concentrate solely on the sale of quality fresh fish had been criticized by those who claimed the future of the industry was in frozen fish. He pointed out that his firm sold more fresh fish in the past year than ever before. Fresh fish, he continued, will maintain its demand for a mighty long time, and that despite the extensive television advertising of frozen fish, there is and will remain an enormous demand for fresh fish. The firm's policy, he stated, was to continue to buy good fresh fish.

The firm's spokesman predicted that in the years ahead there would still be many people who would demand and buy fresh fish. (Fish Trades Gazette, April 15, 1961.)

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TRAWLER "PRINCE CHARLES" WINS SILVER COD TROPHY FOR 1960:

The winner of the coverted Silver Cod Trophy for 1960 in Great Britain was the Hull trawler Prince Charles. The total landings of the 691-ton trawler for trips made during 1960 were somewhat more than 39,604 kits or 5,544,560 pounds (valued at US$425,986), the highest amount landed during the year by any distant-water trawler fishing out of Britain's three main ports. The 1959 winner of the trophy, the Falstaff, came in second in the 1960 competition with total landings only 118,440 pounds less than the Prince Charles. The Falstaff's winning total in 1959 was 39,695 kits or 5,557,300 pounds. (Fish Trades Gazette, January 14, 1961.)

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EXPERIMENTS CONDUCTED ON WHETHER OR NOT FISH SEE TRAWL NET:

A question that has puzzled fishermen for countless years is--do fish see the trawl? Experiments have been carried out to obtain the answer by the Marine Laboratory, Aberdeen, Scotland.

In the spring of 1960, the Laboratory was able to establish shoals of herring in some large disused oyster cleaning tanks near Stranraer. The tanks were 50 feet by 40 feet with about 4 feet of water, and it was possible to test the behavior of herring when various types of obstacles were approaching them.

A number of different devices were used--various types of trawl ground ropes, strings of seine-net floats or trawl floats, a string of underwater lights, a curtain of air bubbles, and some netting and model trawls.

In daylight it was found that any device that could be seen easily would herd the herring quite effectively. The fish generally first reacted to the approaching obstacle when it was only 4 to 5 feet away and then swam about the same distance in front of it.

The best herding was obtained with obstacles at the same level as the fish. The speed of approach was also important. In most experiments it was between 1 and 2 knots and there was time for the fish to be herded. At speeds in excess of three knots the fish were quickly overtaken.

As a marked contrast, in darkness, the herring weren't herded by these moving obstacles. When they were pulled through the tank, the herring passed above or below or were struck by them. This held true even with the curtain of air bubbles and string of underwater lights.

These contrasting observations between daylight and darkness suggest the importance of sight when herring react to obstacles.

By doing repeated experiments at dusk as the light became reduced, it was possible to measure the minimum amount of light required for herding. In a later survey at sea it was found that the light on the sea bed will very often be below this minimum, even in broad daylight.

This will occur either in fairly clear water at a good depth or in shallower depths where the water is murky.

United Kingdom (Contd.):

This may mean there will be many times when sight will be inaffective in herding fish. Where sight is important, for instance, in clear or shallow water in daylight, these devices will have to be very effective to perform their function in the short time available at normal trawling speeds before the fish are overtaken.

It is difficult to say at this stage how important other factors such as vibration or noise are. It is not possible to produce the same conditions in a tank as those resulting from the use of a trawl at sea.

The Laboratory hopes this year to start solving this problem by the use of recorded trawl noises and by devices for producing vibrations and to see what effect these have. (The Fishing News, May 26, 1961.)

Viet-Nam

ACHIEVEMENT IN FISHERIES DEVELOPMENT:

Major achievements in the area of fisheries development in Viet-Nam during the first quarter of 1961 were three: the development of new export markets, the discovery of large schools of threadfin further north than ever before, and the undertaking of a survey of the nation's fisheries resources.

In the field of exports, new contracts were signed by fishermen's cooperatives--2 with Bangkok firms, 1 with a Singapore firm.

Considerable progress was made toward identification of Viet-Nam's fisheries resources and toward the development of a statistical section within the Fisheries Directorate under the supervision of a Japanese Government fishery statistician employed by a United States consultant firm under a U. S. International Cooperation Administration contract. A series of four questionnaires were used by Vietnanese officials to secure information on the fishing industry--numbers and distribution of fishermen, numbers and type of boats, type of gear used, amount and type of catch, at what seasons and depths, etc. At the end of the reporting period, data from the survey was beginning to come in. ICA technicians say that it will probably not be reasonably complete until September 1961, but will be ultimately important as a basis for scientific fisheries management, and avoiding overexploitation of fishing resources.

At the beginning of March, through the use of one of the fish-finding devices supplied by U. S. Operations Mission to the Fisheries Directorate, a large concentration of threadfin (Polynemus) was discovered approximately 35 miles southeast of the fishing port of Ham Tan in Binh Tuy Province, which represented the first discovery of this type of fish in commercial quantities north of Cap St. Jacques, and has resulted in new prosperity for fishermen of the area. (They receive VN$60 per kilo (almost 78 U. S. cents a pound) for threadfin as opposed to VN$14 (18 cents a pound) for tuna and VN$4 (5 cents a pound) for sole.) Threadfin from the Ca Mau area has for several years been an important export item to Singapore, with exports to Bangkok now starting. Fisheries technicians have cause to believe that the discovery of these fish in that area may indicate the presence of considerable schools further north.

In other developments, there was continuing progress in developing new methods of preserving and processing marine fish and shellfish. Two specific achievements of the technology section of the Fisheries Directorate were: (1) the development of a method for reducing nuoc mam (fish sauce, a staple item and important source of protein in the Vietnamese diet) to solid form, which has important military uses, and (2) development of a high-quality agar-agar, a dried sea-

Viet-Nam (Contd.):

weed product made from a blend of 5 types of seaweed found in the coastal waters of central Viet-Nam, a commodity which has not been produced before in Viet-Nam.

Motorization of the Vietnamese bamboo-bottom fishing junks, which continued during the first part of 1961, has vastly expanded the fishing range, and has made possible location of offshore fishing areas previously out of reach by sail or oar. Approximately 300 specially-adapted engines were distributed during the first quarter of 1961, though not all had been installed.

A complete listing of the types of commercial fish commonly found in Viet-Nam was prepared by U. S. Operation Mission and contract technicians. The list identifies the fish by scientific name, Vietnamese name, and common English name. (United States Embassy, Saigon, June 8, 1961.)

Note: Values converted at rate of VN$35 equal US$1.

FISHERY BYPRODUCTS SUBJECT TO SPONTANEOUS HEATING

Product	Tendency to Spontaneous Heating	Usual Shipping Container or Storage Method	Precautions Against Spontaneous Heating	Remarks
Cod Liver Oil	High	Drums, Cans, Glass	Avoid contact of leakage from containers with rags, cotton, or other fibrous combustible materials.	Impregnated organic materials are extremely dangerous.
Fish Meal	High	Bags, Bulk	Keep moisture 6% to 12%. Avoid exposure to heat.	Dangerous if overdried or packaged over 100° F.
Fish Oil	High	Barrels, Drums, Tank Cars	Avoid contact of leakage from containers with rags, cotton, or other fibrous combustible materials.	Impregnated porous or fibrous materials are extremely dangerous. Tendency of various fish oils to heat varies with origin.
Fish Scrap	High	Bulk, Bags	Avoid moisture extremes.	Scrap loaded or stored before cooling is extremely liable to heat.
Menhaden Oil	Moderate to High	Barrels, Drums, Tank Cars	Avoid contact of leakage from containers with rags, cotton, or other fibrous combustible materials.	Dangerous on fibrous products.
Whale Oil	Moderate	Barrels and Tank Cars	Avoid contact of leakage from containers with rags, cotton or other fibrous combustible materials.	Impregnated fibrous materials may heat unless ventilated. Tendency varies with origin of oil.

FEDERAL ACTIONS

Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

PETITION FILED FOR USE OF SODIUM NITRITE IN TUNA PRODUCTS:

A petition filed with the U. S. Food and Drug Administration (Federal Register, May 10, 1961) by a New England tuna products processor proposes a regulation to provide for the safe use of sodium nitrite at 10 parts per million (0.001 percent) in cured tuna and products made from tuna for fixation of color, improvement of texture, and development of flavor.

* * * * *

REGULATIONS ON EXTENSION OF EFFECTIVE DATE FOR FOOD ADDITIVES AMENDMENTS:

The U. S. Commissioner of Food and Drugs is authorized (Public Law 87-19, 75 Stat. 42, enacted April 7, 1961) to further extend the effective date of the food additives amendment to the Federal Food, Drugs and Cosmetic Act when facts are presented to support this action. To administer this provision of the law, the Commissioner announced a specific policy which was published in the April 15, 1961, Federal Register. All extensions of the effective date of the food additives amendment as announced previously were continued in effect to July 1, 1961, unless prior to that time regulations had been issued covering the subject matter of the extension or a regulation of further extension had been denied.

Legal action was not instituted under the food additives amendment before July 1, 1961, involving the use of any food additive for which an extension request was pending before the Commissioner prior to March 6, 1961, unless the Commissioner denied the request prior to July 1, 1961.

If certain specific data were submitted, the Commissioner would consider requests for extensions beyond July 1, 1961. The data to be submitted were indicated in the Federal Register of April 15, 1961.

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SUBSTANCES GENERALLY RECOGNIZED AS SAFE INCORPORATED INTO FOOD ADDITIVES REGULATIONS:

A large number of spices, seasonings, essential oils, oleoresins, and natural extractives (listed in the May 19, 1960, Federal Register with reference to a proposed order listing them as safe for their intended use) have now been determined to be safe within the meaning of section 409 of the Federal Food, Drug, and Cosmetic Act. The Food and Drug Administration made this determination after having considered all comments filed and all data accumulated with reference to the proposed order. The final order incorporating this decision in the regulations appeared in the June 10 Federal Register and it became effective on the date of publication.

The list in the June 10 Federal Register includes almost 280 substances (gives the common name and botanical name of plant source) under the categories of spices and other natural seasonings; essential oils, oleoresins and natural extractives; additives used in conjunction with spices and other natural seasonings and flavorings; natural extractives used in conjunction with spices, seasonings, and flavorings; and a group of miscellaneous items. To mention a few, included are such substances as citrus peels, clove, coriander, dill, lemon peel, lime, onion, nutmeg, saffron, algae, dulse, kelp, allspice, capers, caraway, celery seed, chives, cinnamon, cloves, garlic, ginger, mustard, oregano, paprika, parsley, pepper, sage, thyme, etc. The list of substances has been incorporated in the regulations as "Part 121--Food Additives, subject B, §121.101."

The same Federal Register of June 10 lists a group of substances (four) for which

an additional period of time is given for obtaining tolerances or denials of tolerances or for granting exemptions from tolerances. The extension is until July 1, 1962, with the proviso that a minimum quantity of the additive will be incorporated in the food consistent with good manufacturing practice. This order which became effective on June 2, 1961, is incorporated in the regulations as " Part 121--Food Additives, Subpart A, §121.91."

Also included in the same issue of the Federal Register are certain food additives used in food containers or equipment and food additives otherwise affecting food. These two substances are included in the regulations as "Part 121--Food Additives, Subpart F, §121.2510 for polyethylene and §121.2508 ethylene-butene-1 copolymer."

Note: See Commercial Fisheries Review, May 1961 p. 68, April 1961 p. 91; December 1960 p. 94; July 1960 p. 79; June 1960 p. 67; May 1960 p. 70.

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FOOD ADDITIVES REGULATIONS AMENDED TO INCLUDE ADDITIONAL SUBSTANCES USED IN PAPER PRODUCTS FOR FOOD PACKAGING:

A substantial number of substances migrating to food from paper and paperboard products used in food packaging have been indicated as safe for their intended use. The order amending the food additives regulations to include those substances was published in the Federal Register, June 17, 1961, and became effective on the date of publication. The list of substances has been incorporated in the regulations as "Part 121--Food Additives, Subpart B, Section 121.101 (h)."

Among the 67 substances listed in the amendment as safe for their intended use are acetic acid, calcium chloride, casein, copper sulfate, cornstarch, corn sugar (sirup), glycerin, invert sugar, magnesium sulphate, sodium carbonate, and others.

Department of the Interior

FISH AND WILDLIFE SERVICE

PROPOSAL TO PERMIT USE OF EITHER VOLUME OR VALUE OF CATCH IN DETERMINING ELIGIBILITY FOR FISHING VESSEL CONSTRUCTION SUBSIDY:

The U. S. Fish and Wildlife Service, published in the June 13 Federal Register a proposed change in the fishing vessel construction differential subsidy procedures.

It is proposed to amend the fishing vessel construction differential subsidy procedures to provide, in the definition of a fishery, permission for the owner to use either volume or value of the catch in determining eligibility for a subsidy. At present the regulations prescribed the use of only volume.

As proposed, the definition of a fishery provides that a vessel "To be considered as operating in a fishery, the catch of species in that fishery must amount to at least fifty-one percent (51%) (at the option of the owner by ex-vessel weight or ex-vessel value) of the total catch of the vessel during the calendar year."

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BUREAU OF COMMERCIAL FISHERIES

ASSISTANT DIRECTOR SELECTED:

Promotion of Harold E. Crowther, Chief of the Division of Industrial Research of the U. S. Bureau of Commercial Fisheries, to the position of Assistant Director of the Bureau was announced on June 27, 1961, by the Department of the Interior.

Crowther replaces Andrew W. Anderson who has transferred after more than 30 years of service to become Fishery Attache to the American Embassy in Copenhagen, Denmark. Crowther's appointment was effective June 14. Anderson began work with the Department of State a few days earlier.

Crowther came to the Bureau in 1949 as a fishery engineer engaged in gear research and exploratory fishing. From 1950 to 1953, he was Chief of the Section of Fishery Technology. He resigned to go with a private fishing firm. He returned in 1956 as a Fisheries Products Technologist. In 1957, following the reorganization of the U. S. Fish and Wildlife Service, he became Chief of the Division of Industrial Research and Services, a position he held un-

Harold E. Crowther

til his promotion to Assistant Director. For the past year he has been at the Bureau's Area Office at Terminal Island, Calif., on an executive training program.

As fishery attache in Europe, Anderson will work to improve reporting from this important fishery production and trade area, and also be concerned with developments in such organizations as the European Common Market, the European Free Trade Association, and the Organization for Economic Cooperation and Development.

Anderson become Assistant Director of the Bureau of Commercial Fisheries in April 1957 following the reorganization directed in the Fish and Wildlife Act of 1956. He had been Chief of the Branch of Commercial Fisheries of the Fish and Wildlife Service for the previous 14 years.

Andrew W. Anderson

Anderson has been regularly employed with the Bureau since June 1930, although he had summer employment with the organization in 1919. His first regular position was Statistical and Marketing Agent in the Middle Atlantic States. The following February he became Assistant Fisheries Technologist and served successively in Washington, D. C.; Gloucester, Mass.; Seattle and Anacortes, Wash.; Astoria, Oreg.; and Larsen Bay, Kodiak Island, Alaska. He returned to the Washington Office in 1937.

Department of Labor

WAGE AND HOUR DIVISION

HEARING TO INVESTIGATE AND RECOMMEND MINIMUM WAGES FOR AMERICAN SAMOA:

The U. S. Secretary of Labor appointed Industry Committee No. 4 to recommend minimum hourly wage rates under the Fair Labor Standards Act for all industries in American Samoa. The committee was to begin its public hearings on July 19, 1961, in Pago Pago, American Samoa.

The Act authorizes industry committees for American Samoa to recommend minimum wage rates at or below the $1.00-an-hour minimum applicable in the continental United States. These committees are equally representative of employers, employees, and the public, and include residents of both American Samoa and the mainland. Committee No. 4 is also authorized to consider rates for employees who will be newly covered by the Fair Labor Standards Amendments of 1961.

At present the minimum wage rates in American Samoa are 75 cents an hour for fish canning and processing, shipping and transportation, and petroleum marketing, and 55 cents an hour for other industries.

Members of the committee are:

For the Public:
James C. Hill (Chairman), Labor Arbitrator, New York, N. Y.
S. P. Aumoeualogo, House of Representatives, Government of American Samoa, Pago Pago, American Samoa.

For the Employers:
Charles R. Carry, Executive Director, California Fish Canners Association, Inc., Terminal Island, Calif.
Leonard B. Quamma, Van Camp Sea Food Company, Pago Pago, American Samoa.

For the Employees:
George J. Richardson, Special Representative, Office of the President, AFL-CIO, Washington, D. C.
Philip J. Nomura, Assistant Director of Public Works, Government of American Samoa, Pago Pago, American Samoa.

The formal notice of appointment was published in the June 21 Federal Register.

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REGULATIONS ISSUED FOR REVIEW COMMITTEES IN PUERTO RICO AND VIRGIN ISLANDS:

Regulations which set forth the procedures governing applications for appointment of

wage review committees for industries in Puerto Rico and the Virgin Islands were published in the May 27, 1961, Federal Register. The regulations, designated as Part 512, Title 29, of the Code of Federal Regulations, were issued pursuant to the Fair Labor Standards Amendments of 1961 by the Wage and Hour and Public Contracts Divisions of the U. S. Department of Labor.

The amendments provide, among other things, that any employer, or group of employers, employing a majority of employees in an industry in Puerto Rico or the Virgin Islands may apply, no later than July 4, 1961, to the Secretary of Labor for the appointment of a review committee to recommend the minimum rate or rates to be paid such employees in lieu of the rate or rates resulting from the 15-percent statutory increase provided by the amendments.

The Secretary may appoint a review committee only if proper application has been made and he has reasonable cause to believe, on the basis of financial and other information contained in the application, that compliance with the statutory rate will substantially curtail employment in the industry.

The amendments indicate that an application for the appointment of a review committee is to be made for an industry, and not for part of an industry.

The regulations specify items of information which would generally be essential for a determination, as a guide to the applicant. Sufficient information must be supplied to permit the Secretary to conclude that there is reasonable cause to believe that the industry cannot pay the 15-percent increase without substantial curtailment of employment. If the information furnished is not sufficient to make such a determination, the application will be denied.

All information submitted with an application will, if the application is granted, be referred to the review committee appointed for that industry. It will also be available to the public after the date that the application is granted. If an application is denied, none of the information will be made available to any persons outside those in the Department whose duties require the examination of such applications.

The regulations also provide that regulations, Part 511, on wage order procedure, will apply to review committees, except where inconsistent with regulations, Part 512, or the Fair Labor Standards Amendments of 1961. Thus, review committees will operate under the same rules and have the same authority as the usual industry committees. They will be tripartite in membership and will receive prehearing statements from those who wish to participate as parties. They may also establish classifications within an industry and may recommend rates up to the new statutory minimum of $1.15 an hour.

The regulations as published include sections on scope and application, statutory requirements prerequisite for appointment of review committees, industry, confidentiality, identification and filing date, majority of employers in the industry, financial and other information, payroll and employment data, other information, action on application, review committee procedure, effective period of the 15-percent increase or the review committee wage order, and surety undertaking.

Treasury Department

BUREAU OF CUSTOMS

REGULATIONS AMENDED ON ENTRY OF PRODUCTS OF AMERICAN FISHERIES TRANSFERRED AT SEA:

Relating to entry of products of the American fisheries taken on the high seas when they are shipped to the United States by being transferred at sea to another fishing vessel of the same fleet returning to port, the May 17, 1961, Federal Register, amends Customs Regulations, Sections 10.78 and 10.79, as follows:

Title 19—CUSTOMS DUTIES

Chapter I—Bureau of Customs, Department of the Treasury

[T.D. 55384]

PART 10—ARTICLES CONDITIONALLY FREE, SUBJECT TO A REDUCED RATE, ETC.

Products of American Fisheries

Sections 10.78 and 10.79, Customs Regulations, relating to entry of products of American fisheries, amended.

To clarify the phrase "imported by the taking vessel," in § 10.79, and to eliminate the requirement for entry of products of American fisheries taken on the high seas when they are shipped to the United States by being transferred at

sea to another fishing vessel of the same fleet returning to port, the following changes are made in the Customs Regulations:

Section 10.78(a) is amended to read as follows:

§ 10.78 Entry.

(a) Except as prescribed in § 10.79(d), no entry shall be required for fish or other marine products taken on the high seas by vessels of the United States or by residents of the United States in undocumented vessels owned in the United States when such fish or other products are brought into port by the taking vessel, or are transferred at sea to another fishing vessel of the same fleet and brought into port.

§ 10.79 [Amendment]

The first sentence of § 10.79(a) is amended to read as follows: "When products of American fisheries claimed to be free of duty under paragraph 1730 (a), Tariff Act of 1930, are imported from a foreign country or its territorial waters by the taking vessel, or are shipped, except as provided for in § 10.78 (a), to the United States by the master, owner, or agent of the taking vessel otherwise than in the taking vessel, a declaration, customs Form 3295, of the master of the taking vessel, verified by at least two members of the crew, shall be required in connection with the entry."

(R.S. 251, sec. 624, 46 Stat. 759; 19 U.S.C. 66, 1624)

[SEAL] D. B. STRUBINGER,
Acting Commissioner of Customs.

Approved: May 10, 1961.

A. GILMORE FLUES,
Assistant Secretary of the Treasury.

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CANADIAN GREAT LAKES FISHING VESSELS MAY NOT LAND IN U. S. PORTS:

Canadian fishing vessels have been reported operating in United States and/or Canadian waters on Lake Superior and landing their catches in United States Great Lakes ports. These vessels were licensed by the State of Michigan to fish in Michigan waters of Lake Superior.

On April 10, 1961, the Bureau of Customs, U. S. Treasury Department, ruled that Section 251, title 46, United States Code, denies to foreign-flag vessels "the privileges of vessels employed in the . . . fisheries," thus excluding Canadian fishing vessels from taking fish in the territorial waters of the United States. Section 4.96(e) of the Customs Regulations, among other things, permits a Canadian nonconvention fishing vessel to come into a port of the United States for the purpose of securing supplies, equipment, or repairs, subject to compliance with the usual requirements applicable to foreign vessels in ports of the United States. However, landing the catch of any such vessel is prohibited, regardless of where the catch is taken.

Accordingly, Canadian vessels are prohibited by Section 251 from engaging in commercial fishing in territorial waters of the United States and from landing in a port of the United States fish taken by such vessels regardless of where the catch is taken.

Eighty-Seventh Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

FEDERAL BOATING ACT OF 1958 AMENDMENTS: On June 14, the Committee on Merchant Marine and Fisheries met in executive session and ordered reported to House S. 883, a bill to extend the application of the Federal Boating Act of 1958 to the Commonwealth of Puerto Rico, the Virgin Islands, and Guam.

FISH AND WILDLIFE AID THROUGH EQUIPMENT TRANSFER: S. 2173 (McCarthy & Humphrey), introduced in Senate June 29, a bill to provide that excess personal property of the United States may be donated to the States for the promotion of fish and wildlife management activities, and for other purposes; to Committee on Government Operations. Similar to H. R. 4724 (Barry).

FOOD AND AGRICULTURE ORGANIZATION: United States Contribution to the Food and Agriculture Organization (Hearing before the Subcommittee on International Organizations and Movements of the Committee on Foreign Affairs, House of Representatives, Eighty-Seventh Congress, First Session on draft legislation--Executive Communication 825--to amend the joint resolution providing for membership of the United States in the Food and Agriculture Organization of the United Nations, May 24, 1961), 31 pp., printed. Contains statements of various officials of Department of State, and Department of Agriculture. Proposed legislation would remove the dollar ceiling on the amount authorized to be appropriated annually for United States contribution to the FAO. United Nations program of technical assistance carried out by FAO includes fisheries (fishing resource surveys, fishery technology, and fish processing and marketing);

and among the projects executed by FAO approved by the Special Fund Governing Council is included one on fisheries institutes.

FUR SEAL OPERATIONS: On June 21, Executive Communication 1056, a letter from the Comptroller General of the United States, transmitting a report on the review of fur seal operations and administration of the Pribilof Islands, Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, Department of the Interior, was submitted to the House; to Committee on Government Operations. Identical report received in Senate same date.

GAME AND FOOD FISH CONSERVATION IN DAM RESERVOIRS: H. R. 7795 (Sikes), introduced in House June 21, a bill to direct the Secretary of the Interior to establish a research program in order to determine means of improving the conservation of game and food fish in dam reservoirs; to Committee on Merchant Marine and Fisheries. Identical to H. R. 2722.

GULF OF MEXICO OUTER CONTINENTAL SHELF RESTRICTIONS: On July 12 and 19, the full House Committee on Interior and Insular Affairs considered H. R. 6745, to provide for the restriction of certain areas in the Outer Continental Shelf, for defense purposes and for other purposes (Matagorda Water Range); and H. R. 6849, to provide for the restriction of certain areas in the Outer Continental Shelf, known as the Corpus Christi Offshore Warning Areas, for defense purposes and for other purposes.

IMPORT COMPETITION ADJUSTMENT: H. R. 7858 (Harvey of Indiana), introduced in House June 26, a bill to regulate the foreign commerce of the United States by providing for fair competition between domestic industries that supply articles imported into the United States, and for other purposes; to Committee on Ways and Means. Also, on June 29 introduced in House, H. R. 7986 (Merrow).

MEDICAL CARE FOR VESSEL PERSONNEL: H. R. 8029 (Hansen), introduced in House July 10, a bill to provide medical care for certain persons engaged on board a vessel in the care, preservation, or navigation of such vessel; to the Committee on Interstate and Foreign Commerce. Identical to S. 367.

METRIC SYSTEM STUDY: On June 29, Subcommittee No. 1 of the House Committee on Science and Astronautics held a hearing on H. R. 269 and H. R. 2049, bills to provide the Secretary of Commerce to conduct a study to determine the practicability and desirability of the adoption by the United States of the metric system of weights and measures. Public witnesses were heard.

NATIONAL SCIENCE ACADEMY: H. R. 8046 (Mrs. St. George), introduced in House July 10, a bill to provide for the establishment, under the National Science Foundation, of a National Science Academy; to Committee on Science and Astronautics. Similar bill H. R. 8085 (Martin), introduced in House July 11.

NATIONAL FISHERIES CENTER AND AQUARIUM: H. R. 8181 (Kirwan), introduced in House July 17, a bill to authorize the Secretary of the Interior to construct a National Fisheries Center and Aquarium in the District of Columbia; to Committee on District of Columbia.

NATURAL RESOURCES DEVELOPMENT: On July 13 Executive Communication 1135 was received in the House, from the President of the United States, transmitting a draft of a proposed bill entitled "A bill to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of a Water Resources Council and river basin commissions, and by providing financial assistance to the States in order to increase State participation in such planning;" to Committee on Interior and Insular Affairs.

NAVAL OCEANOGRAPHIC OFFICE: H. R. 8045 (Geo. P. Miller), introduced in House July 10, a bill to change the name of the Hydrographic Office to United States Naval Oceanographic Office; to Committee on Armed Services.

OCEANOGRAPHIC RESEARCH PROGRAM: Oceanography 1961--Phase 1 (Hearing before the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries, House of Representatives, Eighty-Seventh Congress, First Session, on H. R. 4340), 104 pp., printed. Contains communication from the President; and reports from the Departments of Commerce, Treasury, Interior, and Navy; statements of various officers of Coast Guard and Navy. Also contains "Report of Coast Guard Facilities and Operations in Activities Relating to Fields of Oceanography;" "United States National Oceanographic Program, Fiscal Year 1962," by the Interagency Committee on Oceanography of the Federal Council for Science and Technology; and "Interagency Committee on Oceanography," a roster of membership and panels. New legislation would allow the Coast Guard to collect, analyze, and evaluate scientific data concerning the high seas and the navigable waters of the United States; cooperate and participate with other Federal agencies in the collection, analysis, and evaluation of such data.

On June 19 the Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries heard testimony of various Government witnesses on H. R. 4276, to expand and develop the aquatic resources of the United States. Hearings continue. Hearings were continued on June 20, 21, 22, 27. On July 14, the Subcommittee on Oceanography concluded hearings on H. R. 4276.

On June 20 the Senate Committee on Commerce submitted a report (S. Rept. 426) on S. 901, a bill to advance the marine sciences, with amendments. Bill amended in Committee to provide for long-term grants, contracts or other forms of assistance by the Bureau of Commercial Fisheries to scientists, laboratories, or other non-Federal agencies for research, equipment, or facilities to be used in furtherance of bill's objectives.

The section of the bill concerning studies of economic and legal aspects of commercial fisheries and the utilization of marine products was amended to provide that "such studies may be carried out through contracts with institutions, agencies, or organizations competent to make such studies, or by grants to such institutions, agencies, or organizations." Through this amendment, the report explains, the committee wished to make it clear that the Bureau would not be required to undertake these studies itself but could utilize the services of authorities in these fields.

S. Rept. 426, Advancement of Marine Sciences--Marine Sciences and Research Act of 1961 (87th Congress, 1st Session, June 20, 1961, report from Committee on Commerce to accompany S. 901), 103 pp., printed. Con-

tains provisions of S. 901; various discussions such as "Marine Science--the Neglected Frontier;" "Minerals for the Future;" "The Unfenced Pastures of the Sea;" "Health from the Seas;" "The Menace to Health from the Seas;" "The Highways of International Trade and Friendship;" "Where Land and Ocean Meet--Our 12,255-Mile Coastline;" "Service Agency of the Seas and Lakes;" "Weather in the Oceans;" "Research for Security;" "The Role of Research in Undersea Warfare;" "Needs for Oceanographic Research;" "The Need for Legislation;" "The Inland Ocean;" "Genesis of the Program;" "Cost;" "Analysis of S. 901 by Sections;" and "Agency Reports."

House on June 29 disagreed to Senate amendments to H. R. 6845, to expand the functions of the Coast Guard to include oceanographic research, requested a conference with the Senate, and appointed conferees. On July 12 the Senate insisted on its amendment to H. R. 6845, agreed to conference asked by the House, and appointed conferees.

PACIFIC MARINE FISHERIES COMMISSION: On July 17, the Senate received executive communication, a letter from the Chairman, Pacific Marine Fisheries Commission, Portland, Oreg., transmitting, pursuant to law, a report of that Commission, for the year 1960 (with accompanying report); to Committee on Commerce. Same communication received in House July 17; to Committee on Merchant Marine and Fisheries.

POLLUTION OF SEA: On June 20, Executive Communication 1053, a letter from the Secretary of State, transmitting a draft of a proposed bill entitled "A bill to implement the provisions of the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954," was submitted to the House; referred to Committee on Merchant Marine and Fisheries. On June 21, an identical communication was received in the Senate.

S. 2187 (Magnuson), introduced in Senate June 29, a bill to implement the provisions of the International Convention for the prevention of the Pollution of the Sea by Oil, 1954; to Committee on Commerce. Identical bill H. R. 8152 (Bonner) introduced in House July 13.

POLLUTION OF SEA TREATY IMPLEMENTATION: H. R. 8152 (Bonner), introduced in House July 13, a bill to implement the provisions of the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954; to Committee on Merchant Marine and Fisheries.

PUBLIC WORKS APPROPRIATIONS, 1962: Part I--Civil Functions, Department of the Army (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, First Session), 1053 pp., printed. Under the part on the North Pacific Division, discusses a treaty between the United States and Canada which covers development of the hydroelectric potential of the Columbia River basin, as well as flood control and irrigation and navigation needs. This has resulted in a program of construction of major dams, which has raised the problem of fish passage over these dams to their spawning areas. Covers investigations of the Fish and Wildlife Service in helping to solve this problem. This part of the hearings also has references to fish and wildlife studies by the Fish and Wildlife Service.

Part 2--Civil Functions, Department of the Army (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, First Session), 1361 pp., printed. Contains list of project allocations on the Fish and Wildlife Coordination Act studies (totaling 103), in the amount of $550,000.

SHRIMP IMPORT DUTIES: H. R. 8034 (Kilgore), introduced in House July 10, a bill to amend the Tariff Act of 1930 to impose a duty on shrimp and to provide for duty-free entry of unprocessed shrimp annually in an amount equal to imports of shrimp in 1960; to Committee on Ways and Means. Similar to S. 1571 (Long).

SPORT FISH STUDY: H. R. 7826 (Berry), introduced in House June 22, a bill to authorize and direct the Secretary of the Interior to conduct studies of the genetics of sport fishes and to carry out selective breeding of such fishes to develop strains with inherent attributes valuable in programs of research, fish hatchery production, and management of recreational fishery resources; to Committee on Merchant Marine and Fisheries.

STATE DEPARTMENT APPROPRIATIONS FY 1962: On June 19 the Subcommittee of the Senate Committee on Appropriations continued hearings on H. R. 7371, fiscal 1962 appropriations for the Departments of State and Justice, and the Judiciary. Testimony was received from State Department witnesses. Hearings continued on June 21, 22, 27, and July 10 and 11. Hearings were recessed subject to call of Chair.

UNDOCUMENTED VESSEL NUMBERING REGULATIONS: On July 14, the Senate received executive communication, a letter from Assistant Secretary of Treasury, transmitting, pursuant to law, a copy of interpretative rulings and definitions of terms used in certain regulations regarding numbering of undocumented vessels, statistics on numbering, and boating accident reports and accident statistics (with accompanying paper); to Committee on Commerce.

VESSEL MEASUREMENT: H. R. 8150 (Bonner), introduced in House July 13, a bill to simplify the admeasurement of small vessels; to Committee on Merchant Marine and Fisheries. Identical to S. 1936 (Magnuson).

WATER POLLUTION CONTROL: On June 22, the Senate passed H. R. 6441, a bill to amend the Federal Water Pollution Control Act so as to provide a more effective program of water pollution control, after Committee on Public Works was discharged from its further consideration. It was amended by substituting for its text the amended language of S. 120, companion bill. Prior to these actions, S. 120 had been amended by adoption of all committee amendments (with two technical perfecting amendments); and an amendment by Case (S. Dak.), providing that when need for pollution control in a community is due to Federal activity an additional allocation may be made to meet an equitable portion of such need. Senate insisted on its amendments, asked for conference with House and appointed conferees. S. 120 was indefinitely postponed.

On June 27 the House disagreed to Senate amendments to H. R. 6441, agreed to a conference with the Senate; and appointed conferees.

On June 28 conferees in executive session agreed to file conference report (H. Rept. No. 675) on differences between Senate- and House-passed versions of H. R. 6441.

On July 6 the Committee on Conference reported on H. R. 6441 without amendment (H. Rept. No. 675).

H. Rept. No. 675, Federal Water Pollution Control Act Amendments of 1961 (July 6, 1961, report from the committee of conference to accompany H. R. 6441), 14

pp., printed. Contains amendments to bill as agreed on by conference committee; and a statement of the managers on the part of the House explaining of the effect of the action agreed upon by the conferees and recommendations in accompanying conference report. On July 14, the Senate adopted conference report on and cleared for President H. R. 6441.

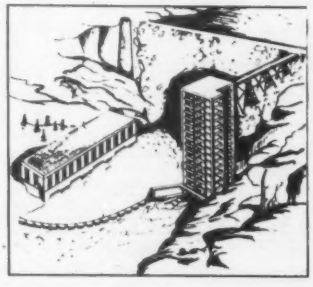
On July 13, the House adopted conference report on H. R. 6441.

WATER RESOURCES CONSERVATION: S. 2246 (Anderson), introduced in Senate July 14, a bill to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of a Water Resources Council and river basin commissions, and by providing financial assistance to the States in order to increase State participation in such planning; to Committee on Interior and Insular Affairs. This bill is the President's water resources bill of 1962 in accordance with executive communication received in Senate also on July 14. Also H. R. 8177 (Aspinall), introduced in House July 17, identical to S. 2246.

WORLD TRADE: S. Report No. 446, The United States and World Trade, Challenges and Opportunities (June 26, 1961, 87th Congress, 1st Session, Final Report of the Committee on Commerce, United States Senate, prepared by its special staff on the study of U. S. Foreign Commerce, pursuant to S. Res. 243, 86th Congress), 340 pp., printed. Report is made up of two parts--Part I. World Trade: The challenge to U. S. Policy; and Part II. Essentials of a modern trade policy. Contains two appendices, 45 tables, and 6 charts. This report maintains that the United States should have a dynamic national trade policy, reflecting our confidence in the power, the resiliency, the ingenuity and creative capacity of the American economy. A number of proposals and recommendations are advanced with respect to various aspects of trade policy and administration.

SALMON STAIRCASE AT DAMS

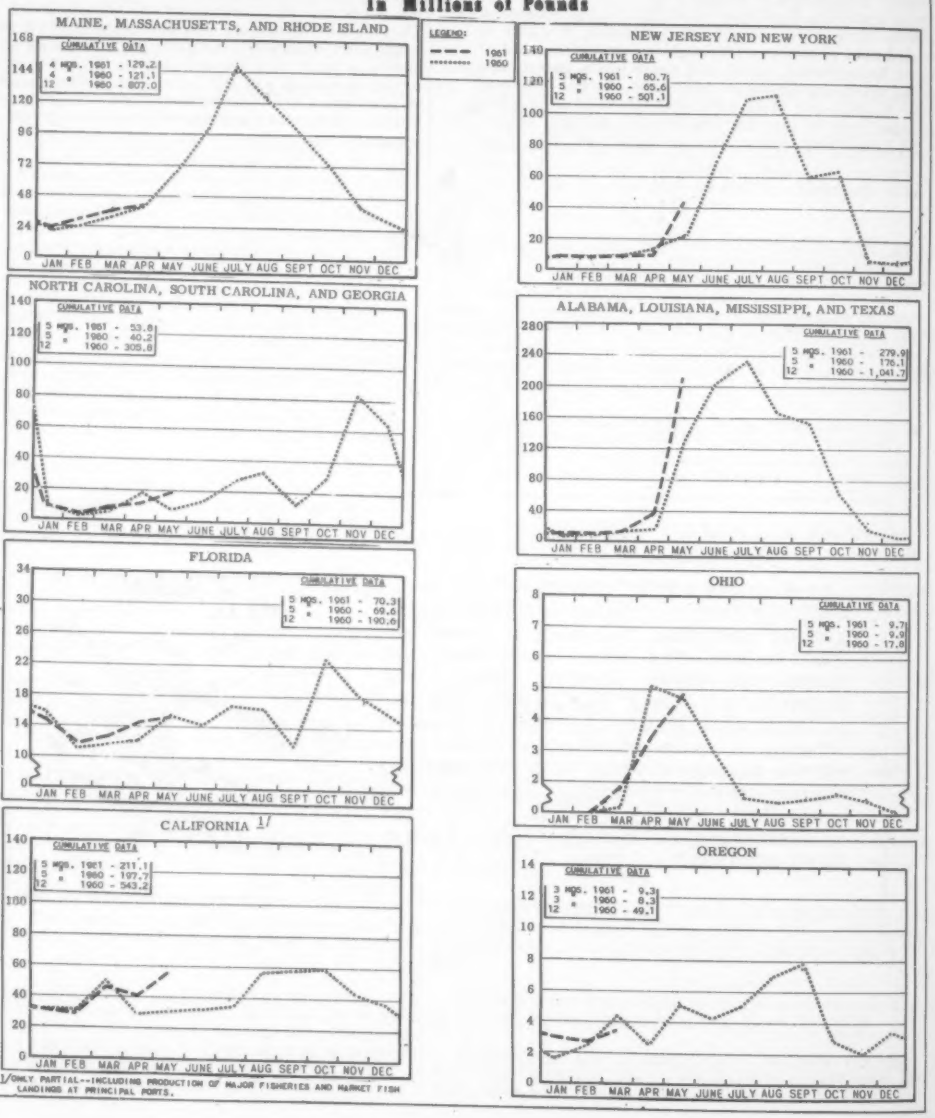
A spiral water "staircase" for salmon hurdling over dams during their migration upstream to spawn received another patent. The invention of James M. Wardle of Ottawa, Ontario, Canada, won patent No. 2,978,873. Rights were assigned to Northwest Power Industries Limited, Ottawa. A series of steps, or pools, provide a passageway for both the spawning salmon and their returning fingerlings, with every 12th pool designed as a stop-over, or resting place. (Science News Letter, April 29, 1961)



FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

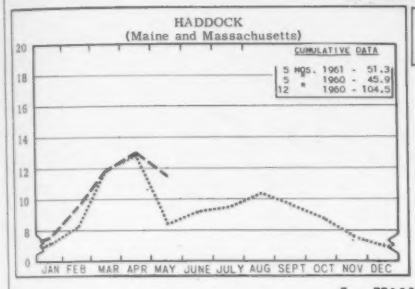
In Millions of Pounds

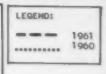

MAINE, MASSACHUSETTS, AND RHODE ISLAND
CUMULATIVE DATA
4 MOS. 1961 - 129.2
4 " 1960 - 121.1
12 " 1960 - 807.0
LEGEND:
1961
1960
NEW JERSEY AND NEW YORK
CUMULATIVE DATA
5 MOS. 1961 - 80.7
5 " 1960 - 65.6
12 " 1960 - 501.1
NORTH CAROLINA, SOUTH CAROLINA, AND GEORGIA
CUMULATIVE DATA
5 MOS. 1961 - 53.8
5 " 1960 - 40.2
12 " 1960 - 305.8
ALABAMA, LOUISIANA, MISSISSIPPI, AND TEXAS
CUMULATIVE DATA
5 MOS. 1961 - 279.9
5 " 1960 - 176.1
12 " 1960 - 1,041.7
FLORIDA
CUMULATIVE DATA
5 MOS. 1961 - 70.3
5 " 1960 - 69.6
12 " 1960 - 190.6
OHIO
CUMULATIVE DATA
5 MOS. 1961 - 9.7
5 " 1960 - 9.9
12 " 1960 - 17.8
CALIFORNIA 1/
CUMULATIVE DATA
5 MOS. 1961 - 211.1
5 " 1960 - 197.7
12 " 1960 - 543.2
OREGON
CUMULATIVE DATA
3 MOS. 1961 - 9.3
3 " 1960 - 8.3
12 " 1960 - 49.1
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

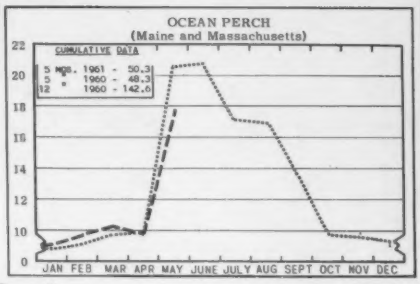
1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

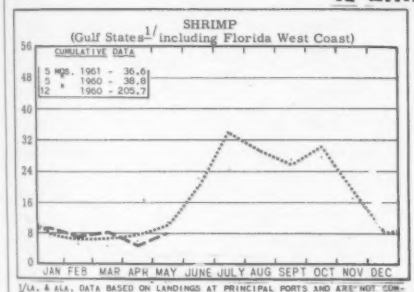
In Millions of Pounds

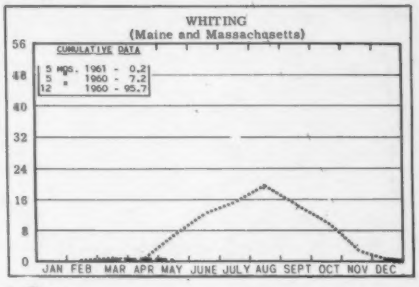

HADDOCK
(Maine and Massachusetts)
CUMULATIVE DATA
5 MOS. 1961 - 51.3
5 " 1960 - 45.9
12 " 1960 - 104.5
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC




OCEAN PERCH
(Maine and Massachusetts)
CUMULATIVE DATA
5 MOS. 1961 - 50.3
5 " 1960 - 48.3
12 " 1960 - 142.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

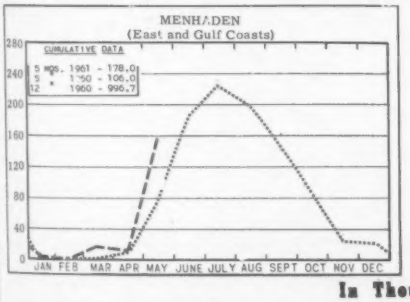
In Millions of Pounds

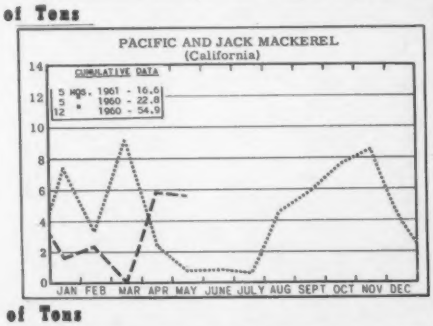

SHRIMP
(Gulf States 1/ including Florida West Coast)
CUMULATIVE DATA
5 MOS. 1961 - 36.6
5 " 1960 - 38.8
12 " 1960 - 205.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


WHITING
(Maine and Massachusetts)
CUMULATIVE DATA
5 MOS. 1961 - 0.2
5 " 1960 - 7.2
12 " 1960 - 95.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

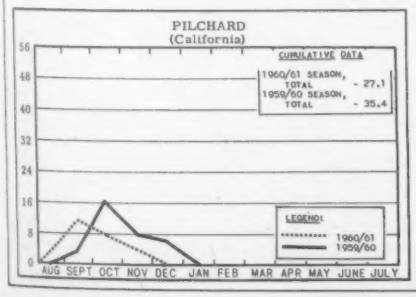
1/La. & Ala. data based on landings at principal ports and are not complete.

In Thousands of Tons


MENHADEN
(East and Gulf Coasts)
CUMULATIVE DATA
5 MOS. 1961 - 178.0
5 " 1960 - 106.0
12 " 1960 - 996.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


PACIFIC AND JACK MACKEREL
(California)
CUMULATIVE DATA
5 MOS. 1961 - 16.6
5 " 1960 - 22.8
12 " 1960 - 54.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Thousands of Tons



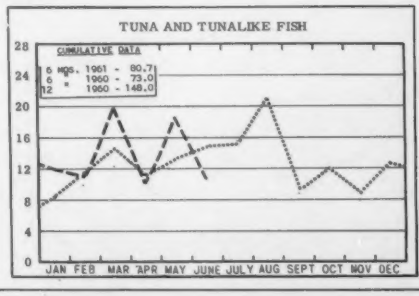
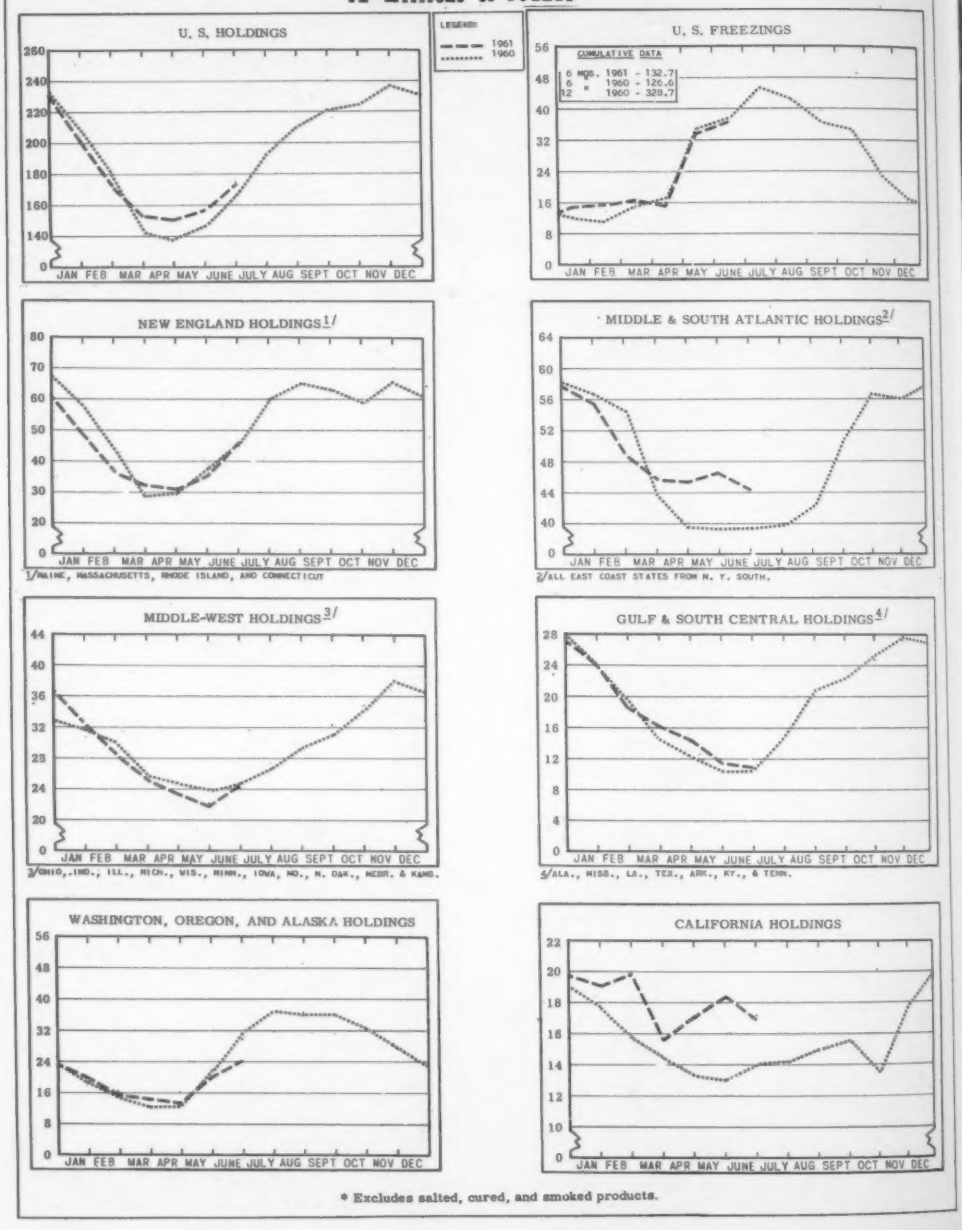

TUNA AND TUNALIKE FISH
CUMULATIVE DATA
6 MOS. 1961 - 80.7
6 " 1960 - 73.0
12 " 1960 - 148.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds


U. S. HOLDINGS
LEGEND
1961
1960
U. S. FREEZINGS
CUMULATIVE DATA
6 MOS. 1961 - 132.7
6 " 1960 - 126.6
12 " 1960 - 328.7
NEW ENGLAND HOLDINGS 1/
MIDDLE & SOUTH ATLANTIC HOLDINGS 2/
MIDDLE-WEST HOLDINGS 3/
GULF & SOUTH CENTRAL HOLDINGS 4/
WASHINGTON, OREGON, AND ALASKA HOLDINGS
CALIFORNIA HOLDINGS
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT

2/ ALL EAST COAST STATES FROM N. Y. SOUTH.

3/ OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.

4/ ALA., MISS., LA., TEX., ARK., KY., & TENN.

* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

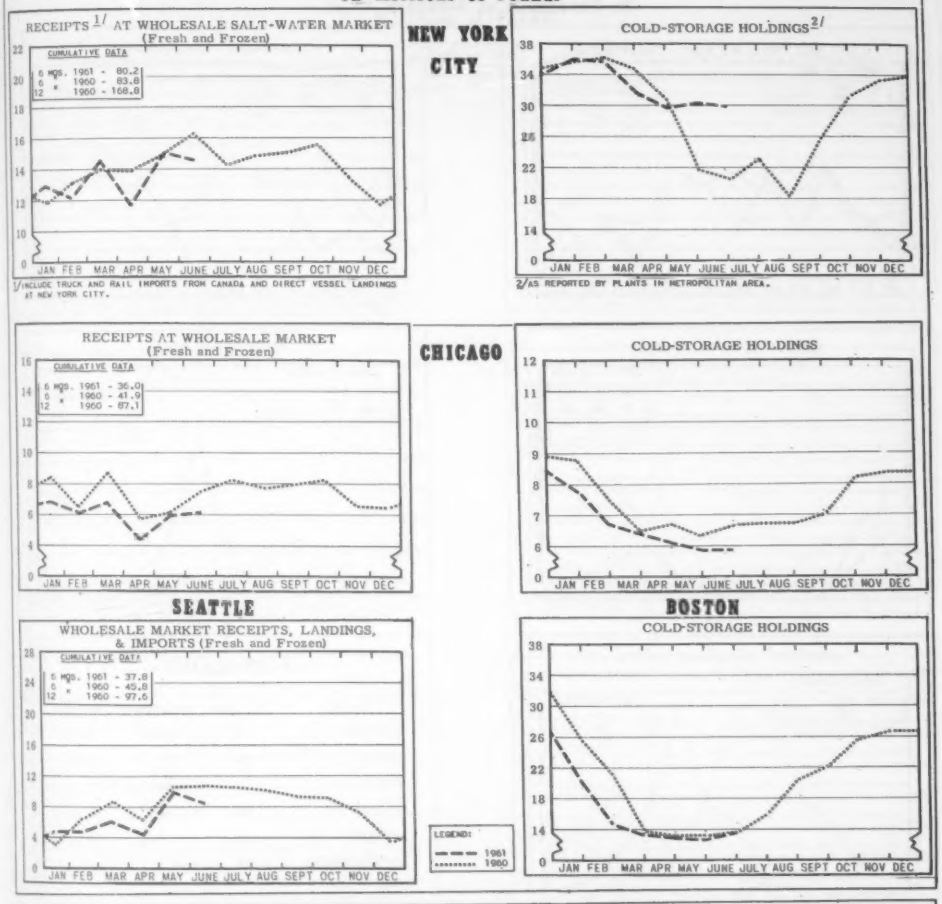

RECEIPTS 1/ AT WHOLESALE SALT-WATER MARKET (Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1961 - 80.2
6 " 1960 - 83.8
12 " 1960 - 168.8
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.
NEW YORK CITY
COLD-STORAGE HOLDINGS 2/
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.
RECEIPTS AT WHOLESALE MARKET (Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1961 - 36.0
6 " 1960 - 41.9
12 " 1960 - 87.1
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
CHICAGO
COLD-STORAGE HOLDINGS
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
SEATTLE
WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1961 - 37.8
6 " 1960 - 45.8
12 " 1960 - 97.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
BOSTON
COLD-STORAGE HOLDINGS
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
LEGEND:
1961
1960

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

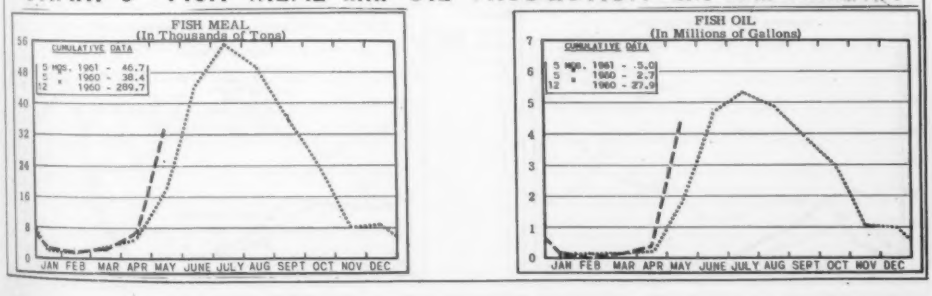
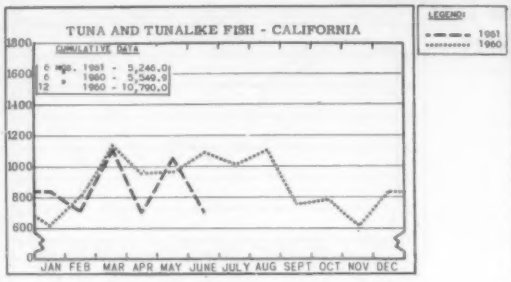
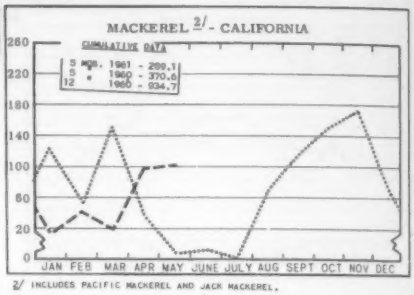

FISH MEAL
(In Thousands of Tons)
CUMULATIVE DATA
5 MOS. 1961 - 46.7
5 " 1960 - 38.4
12 " 1960 - 289.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
FISH OIL
(In Millions of Gallons)
CUMULATIVE DATA
5 MOS. 1961 - 5.0
5 " 1960 - 2.7
12 " 1960 - 27.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

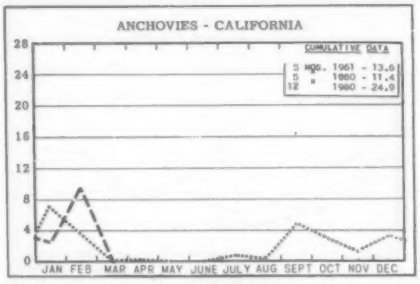
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

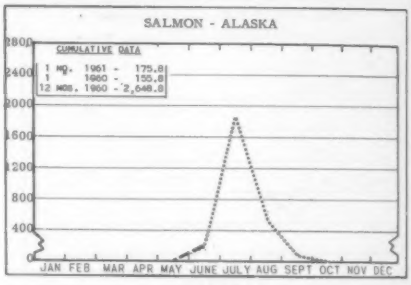
In Thousands of Standard Cases

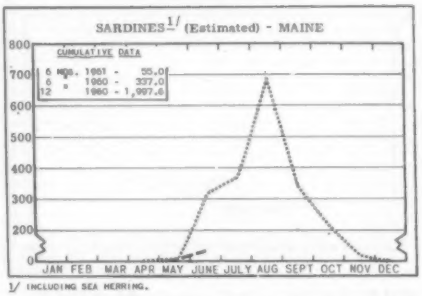

TUNA AND TUNALIKE FISH - CALIFORNIA
CUMULATIVE DATA
6 MOS. 1961 - 5,246.0
6 " 1960 - 5,549.9
12 " 1960 - 10,790.0
LEGEND:
1961
1960
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC


MACKEREL 2/ - CALIFORNIA
CUMULATIVE DATA
5 MOS. 1961 - 269.1
5 " 1960 - 370.6
12 " 1960 - 934.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

2/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.


ANCHOVIES - CALIFORNIA
CUMULATIVE DATA
5 MOS. 1961 - 13.6
5 " 1960 - 11.4
12 " 1960 - 24.9
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

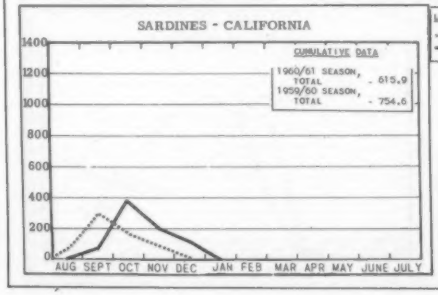



SARDINES 1/ (Estimated) - MAINE
CUMULATIVE DATA
6 MOS. 1961 - 55.0
6 " 1960 - 337.0
12 " 1960 - 1,997.6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.



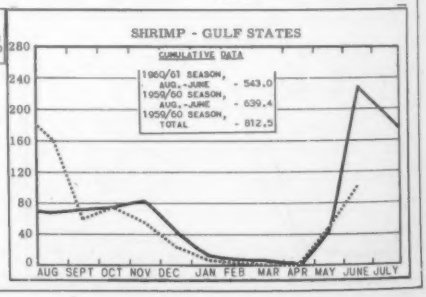
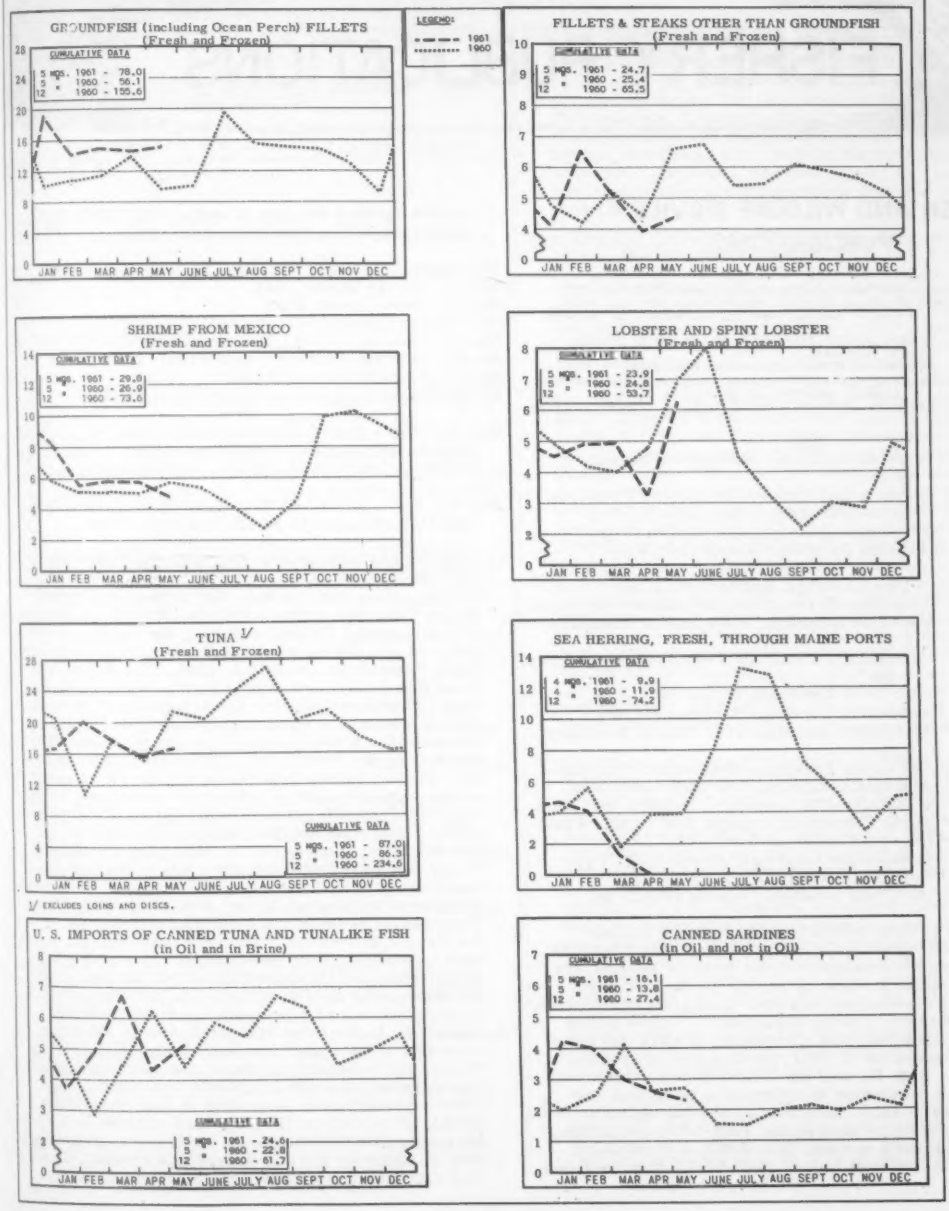

SHRIMP - GULF STATES
CUMULATIVE DATA
1960/61 SEASON, AUG.-JUNE - 543.0
1959/60 SEASON, AUG.-JUNE - 639.4
1959/60 SEASON, TOTAL - 812.5
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY

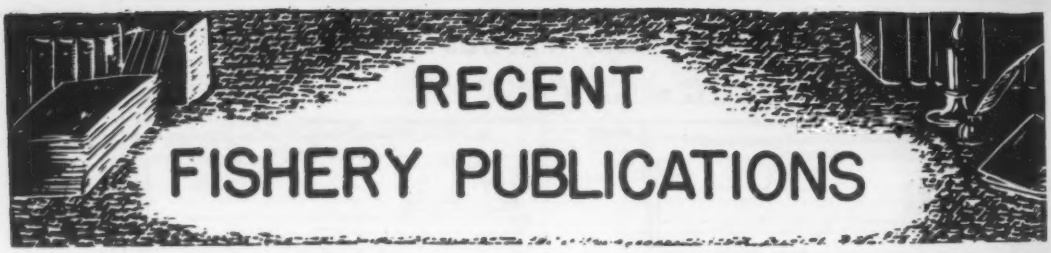
CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (including Ocean Perch) FILLETS
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 78.0
5 " 1960 - 56.1
12 " 1960 - 155.6
LEGEND:
1961
1960
FILLETS & STEAKS OTHER THAN GROUNDFISH
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 24.7
5 " 1960 - 25.4
12 " 1960 - 65.5
SHRIMP FROM MEXICO
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 29.8
5 " 1960 - 26.9
12 " 1960 - 73.6
LOBSTER AND SPINY LOBSTER
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 23.9
5 " 1960 - 24.8
12 " 1960 - 53.7
TUNA 1/
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1961 - 87.0
5 " 1960 - 86.3
12 " 1960 - 234.6
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
4 MOS. 1961 - 9.9
4 " 1960 - 11.9
12 " 1960 - 74.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/ EXCLUDES LOINS AND DISCS.

U. S. IMPORTS OF CANNED TUNA AND TUNALIKE FISH
(in Oil and in Brine)
CUMULATIVE DATA
5 MOS. 1961 - 24.6
5 " 1960 - 22.8
12 " 1960 - 61.7
CANNED SARDINES
(in Oil and not in Oil)
CUMULATIVE DATA
5 MOS. 1961 - 16.1
5 " 1960 - 13.8
12 " 1960 - 27.4
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC



FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SL - BRANCH OF STATISTICS LIST OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number — Title

CFS-2557 - Florida Landings, 1960 Annual Summary, 13 pp.
CFS-2578 - Imports and Exports of Fishery Products, 1956-1960 Annual Summaries, 12 pp.
CFS-2582 - Michigan Landings, March 1961, 3 pp.
CFS-2583 - Florida Landings, March 1961, 9 pp.
CFS-2584 - Frozen Fish Report, April 1961, 8 pp.
CFS-2585 - Maine Landings, March 1961, 3 pp.
CFS-2586 - Fish Meal & Oil, 1960 Annual Summary, 4 pp.
CFS-2588 - Alabama Landings, 1960 Annual Summary, 5 pp.
CFS-2590 - Mississippi Landings, 1960 Annual Summary, 5 pp.
CFS-2592 - New York Landings, March 1961, 4 pp.
CFS-2593 - Minnesota Landings, March 1961, 2 pp.
CFS-2594 - Maryland Landings, 1960 Annual Summary, 9 pp.
CFS-2596 - California Landings, February 1961, 4 pp.
CFS-2597 - Alabama Landings, February 1961, 3 pp.
CFS-2600 - Massachusetts Landings, January 1961, 4 pp.
CFS-2601 - North Carolina Landings, April 1961, 4 pp.
CFS-2602 - Georgia Landings, April 1961, 2 pp.
CFS-2603 - Mississippi Landings, March 1961, 2 pp.
CFS-2608 - Florida Landings, April 1961, 8 pp.
CFS-2612 - Maryland Landings, March 1961, 3 pp.

FL-516 - Fur Seal Industry of the Pribilof Islands, 1786-1960, by Francis Riley, 19 pp., illus., May 1961. Discusses the discovery of the Pribilof Islands, the sole breeding grounds of the Alaska fur sea herd; the early exploitation and near-extinction of the seals; and evolution of international control--first by the North Pacific Fur Seal Convention of 1911 and later by the Convention of 1957, participated in by Canada, Japan, U. S. S. R., and the United States. Covers the history of production of byproducts from seal carcasses since 1910. Includes statistical tables showing harvest of fur seal skins, 1786-1950; production of fur seal meal and oil, 1919-1960; and shipment and sale of fur seal bones, 1917-1919. Also includes graphs showing harvest of seals, 1820-1960; and production of fur seal meal, 1935-1960.

Wholesale Dealers in Fishery Products (Revised):
SL- 4 - Rhode Island, 1961.
SL- 7 - New Jersey, 1961.
SL-10 - Maryland, 1961.
SL-27 - Indiana (Great Lakes Area), 1960.
SL-28 - Michigan (Great Lakes Area), 1960.
SL-29 - Ohio (Great Lakes Area), 1960.
SL-31 - New York (Great Lakes Area), 1960.

Sep. No. 622 - Processing and Quality Studies of Shrimp Held in Refrigerated Sea Water and Ice: Part 5 - Interchange of Components in a Shrimp-Ice System.

Sep. No. 623 - A $700 Million Food Buyer Offers Special Opportunities to Small Business Firms.

Operations of the Bureau of Commercial Fisheries under the Saltonstall-Kennedy Act, Fiscal Year 1959, 112 pp., illus., processed. The fifth annual report to the Congress of the activities of the U. S. Bureau of Commercial Fisheries during the fiscal year ending June 30, 1959, under the provisions of the Saltonstall-Kennedy Act of July 1, 1954. The Act makes available funds from import duties collected on foreign fishery products for the promotion of the free flow in commerce of domestic fishery products and provides for a wide range of research and services supporting the development and wise utilization of the nation's fishery resources and the stabilization of the domestic fishing industry. Among the important research programs of work during fiscal year 1959: (1) in New England, studies showed that oyster and clam enemies can be controlled by using heavy oils mixed with dry sand; (2) in the Gulf area, exploratory operations revealed commercial concentrations of royal-red shrimp southwest of the Dry Tortugas and east of the Mississippi Delta; (3) in the Pacific Northwest, relatively tasteless and odorless fish oil products were prepared by molecular distillation; and (4) experimental results show fish-oil derivatives may be effective in reducing blood cholesterol, a major contributing factor in heart ailments. In the industrial field, new or expanded emphasis in research was placed on: (1) improving the quality of fishery products, the development and promulgation of grade standards, and conducting voluntary continuous inspection in fish processing plants; (2) a study of the long-term outlook (to 1975) for production and consumption of fishery products. New or expanded service functions included: (1) seafood merchandising clinics for retailers conducted

in three cities in Massachusetts; (2) expanded Market News and statistical coverage; (3) cooperation with industry on the "Fish 'n' Seafood Parade" and Lent promotion campaigns; (4) participation in trade agreement negotiations, the preparation of legislative positions concerned with tariffs and with trade matters, and work with industry on specific import-export trade problems; and (5) the production of films on fishery subjects, the distribution of fishery publications, and the presentation of fish-cookery demonstrations.

A Prospectus for Marine Game Fish Research, 14 pp., illus., processed, December 1959.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number — Title

MNL-52 - Menhaden Fish Oil Prices at New York City, 1950-1961.

MNL-22 - Union of South Africa's Fisheries, 1960.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED:

(Baltimore) Monthly Summary--Fishery Products, March 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, April 1961, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, May 1961, 10 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains albacore forecast, 1961; landings of albacore, 1945-59; tropical storm warnings; and sea-surface temperature charts, eastern Pacific Ocean; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, May 1961, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, April 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, May 1961, 4 pp. (Market News Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, April 1961, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; landings and ex-vessel prices for trips landed at Atlantic Ave., Boston; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for April 1961, 18 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, landings at Fulton Market Docks and Stonington, Conn., imports entered at New York City, primary wholesaler prices for frozen products, cold storage movements and holdings and marketing trends; for the month indicated.

Production of Fishery Products in Selected Areas of Virginia, Maryland, and North Carolina, 1960, by William N. Kelly, 48 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) A summary of commercial landings of fish and shellfish and the production of crab meat and shucked oysters as reported by producers and wholesalers from selected principal fishing localities of Virginia, Maryland, and North Carolina. The statistics contained in this annual summary represent the approximate commercial fisheries production only and do not represent complete commercial landings or production for a given area, individual state, or the Chesapeake Bay area as a whole. However, the statistics give an indication as to the trend in fisheries production for the specific areas designated and reflect the over-all production trend by species, localities, and states.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, May 1961, 9 pp. (Market News Service, U. S. Fish and Wildlife Serv-

ice, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Oreg.) wholesale dealers; shipments of fishery products; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

Glossary of Terms Used in Alaska Fur Seal Research and Management, 15 pp., processed, January 9, 1961. (U. S. Bureau of Commercial Fisheries, Marine Mammal Biological Laboratory, Sand Point Naval Air Station, Seattle 15, Wash.)

In the listing of three English translations of foreign language articles in Commercial Fisheries Review, vol. 23, no. 4, April 1961, pp. 105-106, the source where copies may be obtained is incorrectly shown. They are available, not from the U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, P.O. Box 3830, Honolulu, but from the U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, 2725 Montlake Blvd., Seattle, 2, Wash.

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Abundance and Life History of Shad, St. Johns River, Florida, by Charles Herman Walburg, Fishery Bulletin 177 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 60), 19 pp., illus., printed, 20 cents, 1960.

"Effect of Starvation and Feeding on the Chemical Composition of Brook Trout," by Arthur M. Phillips, Jr., and Donald L. Livingston, article, The Progressive Fish-Culturist, Vol. 22, October 1960, pp. 147-154, printed.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

AIR BUBBLE CURTAIN:

"Study on the Fish-Gathering Effects of Air Curtain," by Yutaka Imamura and Michio Ogura, article, Journal of Tokyo University of Fisheries, vol. 45, no. 2, March 1959, pp. 173-177, printed. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Minato-ku, Tokyo, Japan.

"Study on the Response of Trachurous japonicus to Air-Bubbles," by Yutaka Imamura and Michio Ogura, Journal of Tokyo University of Fisheries, vol. 45, no. 2, March 1959, pp. 196-203, printed. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Minato-ku, Tokyo, Japan.

ALBANIA:

"O Rybolovstve Albanii" (on the Albanian Fisheries), by K. E. Babaian, IA. K. Gololobov, and A. S. Rievin, article, Rybnoe Khoziaistvo, vol. 35, no. 11, 1959, pp. 74-82, illus., printed in Russian. VNIRO Glavniiproekta pri Gosplanie, Moscow, U. S. S. R.

ALGAE:

"Contributions to the Marine Algal Flora of Chile," by Tore Levring, Reports of the Lund University Chile Expedition 1948-49, No. 39, pp. 4-83, illus., printed. Lund University, Lund, Sweden, 1960.

The Ecology of Algae, by C. A. Tryon and R. T. Hartman, The Pymatuning Symposia in Ecology, Special Publication No. 2, printed. Pymatuning Laboratory of Field Biology, University of Pittsburgh, Pittsburgh, Pa., 1959.

The Marine Algae of East Greenland. Part I--Taxonomical; Part II--Geographic Distribution, by Soren Lund, Middeleser om Gronland, bd. 156, no. 1, illus., printed. Middelelser om Gronland, C. A. Reitzel, Copenhagen, Denmark, 1959.

AMINO ACIDS:

"The Amino-Acid Sequence of Sperm Whale Myoglobin: Chemical Studies," by A. B. Edmundson and C. H. W. Hirs; "A Partial Determination by X-Ray Methods, and Its Correlation with Chemical Data," by J. C. Kendrew and others; "Comparison Between the Amino-Acid Sequences of Sperm Whale Myoglobin and of Human Haemoglobin," by H. C. Watson and J. C. Kendrew, articles, Nature, vol. 190, no 4777, May 20, 1961, pp. 663-672, illus., printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

"Nutrition of Salmonoid Fishes. VIII--Indispensable Amino Acids for Sockeye Salmon," by John E. Halver and Warren E. Shanks, article, Journal of Nutrition, vol. 72, November 1960, pp. 340-346, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

ANTIBIOTICS:

"El Hielo-Antibiotica en la Conservacion de Algunos Productos Pesqueros" (Preservation of Some Fishery Products with Ice and Antibiotics), by C. Mateu and G. Varela, article, Anales de Bromatologia, vol. 12, no. 3, 1960, pp. 271-331, printed in Spanish. Sociedad Espanola de Bromatologia, Ciudad Universitaria (Edificio Facultad de Farmacia), Madrid, Spain.

ATLANTIC OCEAN:

Atlantic Ocean Fisheries, edited jointly by Georg Borgstrom and Arthur J. Heighway, 344 pp., illus., printed, £3 7s. 6d. (US$10). Fishing News (Books) Ltd., Ludgate House, 110 Fleet Street, London E. C. 4, England, March 1961.

With the world's population increasing steadily and the growing realization that there is a lack of protein in the diet of many nations today, the search for protein foods is becoming more intensive. The seas and waters of the world seem to promise a potential for protein foods that has not been fully exploited. The North Atlantic Ocean has from the days of the Vikings and Norsemen always been a rich storehouse of fish. But today both the North and South Atlantic, a well-stocked larder, is being explored for larger supplies of fish by the nations bordering this great body of water in order to find food for their growing populations.

The importance of the fishery resources in the Atlantic Ocean, as well as in the other seas of the

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world, is highlighted (1) by the far-flung fleets of Japan, Russia, Norway, the United States, and others exploring unfished areas of the Atlantic for new resources and (2) by the demands of some nations like Norway, Iceland, and South American Countries for extension of territorial fishing limits seaward.

Can the Atlantic be overfished? What is the status of the nations fishing this huge fish pond? This book marshalls an impressive array of facts to answer these questions and gives essential background information of value to administrators, politicians, fishermen, businessmen, and scientists.

The book is well illustrated with photographs and maps and presents numerous tables with detailed data on the fishery resources of the Atlantic and the fishing industries of the nations operating in that great sea which extends from the extremities of South Africa and South America to the Arctic Circle. No matter what your interest or how slight it is, this book is not only good reading but is an excellent book to have for ready reference. It is adequately indexed.

Divided into four main sections, the first of these deals with the fundamental factors necessary to understand the Atlantic Ocean, including physical character, deeps and currents, biology of the life that inhabit that ocean, the availability and commercial value of the fish, the necessary cooperation that is evolving between the nations concerned with the Atlantic as a vital source of food, the question of claims for extended territorial waters and fishing limits, and the practical development of new techniques and tactics for catching fish. Each chapter is written by an authority on the subject. For example, that dealing with the nature and currents of the Atlantic is by Dr. J. N. Carruthers of the National Institute of Oceanography. The biology and nature of fish life inhabiting the ocean are covered by Dr. Taivo Laevester, FAO Fisheries Division biologist, and he concludes with an estimate of the future potential yield which can be secured by maximum exploitation without destroying the stocks. A historical outline of the evolution of international accord on conservation and the fact that the present economics plight of the fishing fleets underlines this need is the subject of the chapter by Basil Engholm, Fisheries Secretary for England and Wales.

A factual account of the actual operations, fishing practices, present and future industrial developments and trends, and statistics of the fisheries of the 22 major nations fishing the Atlantic makes up the second section of the book. There is a chapter, written by an expert, on each of the major nations, starting with Norway and progressing down the western coast of Europe, Sweden, Poland, West Germany, Denmark (including Greenland and the Faroes), Netherlands, Great Britain, Belgium, France, Spain, Portugal, Italy, Angola and Morocco, and South Africa on the southern point of Africa. Crossing to the western Atlantic off the east coast of South America, a chapter reports on the fishery prospects on the Patagonian Continental Shelf. Working up the east coasts of the Americas, there are chapters on Argentina, Brazil, the Caribbean, Mexico, the United States, Canada, and Iceland in the North Atlantic.

There is some scattered information on the fisheries of Russia, but the third section ("Russia's Giant Effort") of this book presents a full and authoritative picture of the Soviet's efforts and progress in both marine and inland fishing. The second of the two chapters in the section is devoted to the subject of the book and covers the Atlantic fisheries of the U. S. S. R., but it goes somewhat beyond that since included are historical data, catch pattern by species and areas, utilization, whaling, foreign trade, major fishery centers, combines, freezing and refrigeration, curing, canning factoryships, mechanization, research and education, research institutes, planning bodies, and nearly every phase of the fisheries of Soviet Russia. The first of the two chapters rounds out the picture of Russia's fisheries by discussing her development of some marine and inland fisheries, and fish utilization. The section on Russia outlines in considerable detail the Soviet Union's tremendous strides in the last ten years to become one of the top-ranking fishery nations of the world. Outlined in the section are the activities of the more than 9,000 fishery scientists and technologists recruited by Russia and trained to find new fishery resources, and new methods of catching and processing them.

Although almost all-inclusive, the book neglects Japan, the leading fishery nation of the world, which in the past few years has entered the Atlantic fisheries, principally fishing for tuna in the tropical Atlantic and trawling off the west coast of Africa. But possibly in a future reprint of this book or in the companion volume on the Pacific Ocean, which is now in preparation, Japan's role in the Atlantic fisheries may be covered.

The fourth and concluding section of the book lists the scientific and common names of some 500 species of fish, and a summary of the report of the British Committee of Inquiry into the British fishing industry.

--Joseph Pileggi

AUSTRALIA:

Additions to the Fish Fauna of Western Australia--2, by G. F. Mees, Fisheries Bulletin No. 9, pt. 2, 9 pp., printed. Director of Fisheries, Fisheries Department, Perth, Australia, 1960.

Division of Fisheries and Oceanography, Annual Report 1959-1960, 24 pp., processed. Commonwealth Scientific and Industrial Research Organization, Marine Laboratory, Cronulla, N.S.W., Australia.

BEHAVIOR OF FISH:

"Studies on Air Screen in Water. 1--Preliminary Observation of Behavior of a Fish School in Relation to an Air Screen," by Kiichiro Kobayashi and others, article, Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 10, November 1959, pp. 222-228, printed in Japanese with English summaries. Faculty of Fisheries, Hokkaido University, Kameda-Machi, Hakodate, Japan.

BIOCHEMISTRY:

The Chemistry of Fish Blood, A Bibliography, by Joseph B. Hunn, CWL Special Publication 2-22, 20 pp., processed. Physiology Division, Directorate of Medical Research, U. S. Army Chemical Warfare Laboratories, Army Chemical Center, Maryland, May 1959.

"Isolation and Properties of Fish Myosin," by G. Hamoir, H. A. McKenzie, and M. B. Smith, article, Biochimica et Biophysica Acta, vol. 40, 1960, pp. 141-149, printed. Biochimica et Biophysica Acta,

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Elsevier Publishing Co., 215 4th Avenue, New York 3, N. Y.

CALIFORNIA:

Statistical Report of Fresh, Canned, Cured, and Manufactured Fishery Products, Year 1960, Circular No. 35, 16 pp., printed. Department of Fish and Game, Biostatistical Section, Marine Resources Operations, Sacramento, Calif., 1961. This report, the latest in a series of annual reports on commercial fishery production in California, includes statistical tables on landings by species and area, tuna imports, fish processing plants, and packing of canned fish. Data also cover volume of other types of processed fish, canned sardines, sardine meal and oil production, and the annual pack of anchovies, tuna, bonito, and yellowtail.

CANADA:

"The Effects on Fisheries of Man-Made Changes in Fresh Water in the Maritime Provinces," by A. L. Pritchard, article, The Canadian Fish Culturist, Issue 25, October 1959, pp. 3-6, printed. The Canadian Fish Culturist, Dept. of Fisheries of Canada, Ottawa Canada.

"The Effects on Fisheries of Man-Made Changes in Fresh Water in the Province of Quebec," by Vadim D. Vladykov, article, The Canadian Fish Culturist, Issue 25, October 1959, pp. 7-12, printed. The Canadian Fish Culturist, Dept. of Fisheries of Canada, Ottawa, Canada.

"The Effects on Fresh water Fisheries of Man-Made Activities in British Columbia," by P. A. Larkin, article, The Canadian Fish Culturist, Issue 25, October 1959, pp. 27-59, printed. The Canadian Fish Culturist, Dept. of Fisheries of Canada, Ottawa, Canada.

"The Effects of Power, Irrigation, and Stock Water Developments of the Fisheries of the South Saskatchewan River," by Richard B. Miller and Martin J. Paetz, article, The Canadian Fish Culturist, Issue 25, October 1959, pp. 13-26, printed. Canadian Fish Culturist, Dept. of Fisheries of Canada, Ottawa, Canada.

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mental trawl nets of modified Northern European design in comparison with the conventional Mediterranean-type trawl gear. Observations indicate that under the prevailing fishing conditions along the Yugoslavian coast, midwater trawling is not likely to become a commercially feasible substitute for the present "lampara" fishing technique (purse seining with light attraction). The author states, however, that "further experience and observations will have to be accumulated, particularly in regard to special fishing conditions in certain limited areas and at certain seasons, before the comparative virtues of both methods can finally be established." As a separate project, demonstrations and tests with electric underwater lamps (incandescent and mercury vapor) for attracting fish were initiated, to establish the comparative advantages of the electric above-water lamps presently used in Yugoslavia. Recommendations on the use of larger trawl gear and future trawl studies are included.

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"Problemas Cientificos das Pescas e sua Resolucao" (Scientific Problems of Fisheries and Their Solution), by J. A. Serra, article, Revista Portuguese de Zoologia e Biologia, vol. 1, no. 1, 1957, pp. 33-87, printed in Portuguese. Revista Portuguese de Zoologia e Biologia, Geral, Serra, Brazil.

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Proceedings of the Gulf and Caribbean Fisheries Institute, Thirteenth Annual Session, Miami Beach, Fla., November 1960, edited by James B. Higman, 186 pp., illus., printed, $2. The Gulf and Caribbean Fisheries Institute, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla., April 1961. This report is divided into five parts, each one containing papers presented during each of the special sessions comprising the general session. The section on the shrimp session includes papers on: "The Role of International Commissions in World Fisheries," by Donald L. McKernan; "Synoptic Rationale of Existing Florida Shrimp Regulations," by Robert M. Ingle; "Promote Your Product or Lose Your Market," by J. Roy Duggan; and "A Report on Federal Programs of Financial Aid to Commercial Fisheries," by C. E. Peterson and Luther L. Long. The part on industrial fisheries session contains papers on: "Potential for Fish Solubles--Liquid Fish in the Fertilizer Industry," by Roy C. Stevens; "Effect of the 1960 Law of the Sea Conference on the High Seas Fisheries," by Wilbert M. Chapman; "Fractionation and Purification of Triglycerides, Fatty Acids, and Methyl Esters from Fish Oils," by Edward H. Gruger, Jr.; "The Multiple-Use of Shrimp Trawlers," by John S. Robas; and "A Challenge to the Fish Meal and Oil Industry in the Gulf of Mexico," by John W. Reintjes and Fred C. June. The section on technology and exploratory session contains papers on: "New Methods of Purse Seining for Tuna in the Eastern Pacific Ocean," by Gordon C. Broadhead and Arthur R. Marshall; "Air-Bubble and Electrical-Field Barriers as Aids to Fishing," by Keith A. Smith; "Fishery Products and Food Additives," by L. M. Beacham; "The Economic Potential of the Calico Scallop Fishery of the Gulf and South Atlantic with Special Reference to the East Coast of Florida," by Jack T. Brawner; and "A Progress Report on Experimental Fishing for Sardine-Like Fishes in the Gulf of Mexico," by Harvey R. Bullis, Jr. The shellfish session part includes papers on: "Status of Researches on Oyster Diseases in North America," by J. G. Mackin; "Delaware Bay Oyster Mortalities," by Harold H. Haskin; "Rehabilitation of Disease-Depleted Oyster Populations in Eastern Canada," by R. R. Logie, R. E. Dirnnan, and E. B. Henderson; "Recent Advances in the Control of Shellfish Predators and Competitors," by Victor L. Loosanoff; "Economic Aspects of Markets for Middle Atlantic Oysters," by John D. Abrahamson; "The Future of the United States Oyster Industry from a Biologist's Viewpoint," by John B. Glude; and "Industry's Appraisal of the Future of the Oyster Industry," by David H. Wallace. The Caribbean and general session part contains papers on: "How Can Research Production be Measured?," by George A. Rounsefell; "Tagging of Anchovetas, Cetengraulis mysticetus, in the Gulf of Panama," by Edward F. Klima and William H. Bayliff; "Movements of Seatrout on the West Coast of Florida," by Alan Moffett and Albert C. Jones; "A World-Wide Approach to Fish Culture Improvement," by Cecil Miles; "The Contribution by the Outboard Motor to the Mechanization and Development of the Fishing Industry," by Ernst Ott; and "Effect of Pesticides on Commercial Fisheries," by Philip A. Butler.

HERRING:

"De Bereiding van Gemarineerde Haring met Behulp van Melkzuur (Preparation of Marinated Herring Using Lactic Acid), by H. Houwing, article, Conserva, vol. 8, no. 10, 1960, pp. 252-253, printed in Dutch. Moorman's Periodieke Pers. N. V., 1 Zwarteweg, The Hague, Netherlands.

"Vintersildfiskets Lonnsomhet 1960" (Winter Herring Fishery Economics 1960), by Gunnar Olsmo, article, Fiskets Gang, vol. 47, no. 10, March 9, 1961, pp. 212-225, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

ICELAND:

"Den Islandske Fiskerinaering i 1960" (Fishery in Iceland, 1960), by Havard Angerman, article, Fiskets Gang, vol. 47, no. 15, April 13, 1961, pp. 311-316, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

IMPORTS:

United States Imports of Merchandise for Consumption (Commodity by Country of Origin), Calendar Year 1960, Report No. FT 110, 205 pp., processed, $1. Bureau of the Census, U. S. Department of Commerce, Washington D. C., May 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) The import statistics include government as well as nongovernment shipments of merchandise (including fish, shellfish, and fishery byproducts) from foreign countries.

IRON ORE FLOTATION:

"Effects of Structure and Unsaturation of Collector on Soap Flotation of Iron Ores," by Strathmore R. B. Cooke, Iwao Iwasaki, and Hyung Sup Choi, article Mining Engineering, September 1960, pp. 1-8, printed. American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., 29 W. 39th St., New York 18, N. Y.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

IRRADIATION:

"A Critical Review of Irradiation in the Food Industry," by D. Rose, article, Canadian Food Industries, vol. 31, no. 5, 1960, pp. 99-103, printed. Federal Publications Ltd., Gardenvale, Que., Canada.

ISRAEL:

Fishermen's Bulletin, vol. 3, no. 7 (27), March 1961, 40 pp., illus., printed in Hebrew. Fishermen's Bulletin, P. O. B. 996, Haifa, Israel. Includes, among others, these articles: "Israeli Fishing Experiments in Ethiopian Waters," by Y. Ariav; "Report on Experiments in the Trawl and Shore Fishery," by Y. Assaf; and "Problems in the Use of Plastics in Fishing," by J. H. White, A. Abramov, and B. Komarovsky.

JAPAN:

Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 11, no. 1, May 1960, 31 pp., illus., printed in Japanese with summaries in English. Faculty of Fisheries, Hokkaido University, Hakodate, Japan. Contains the following papers: "Studies on the Biology of the Sea Urchin. I--Superficial and Histological Gonadal Changes in Gametogenic Processes of Two Sea Urchins, Strongylocentrotus nudus and S. intermedius," by Akira Fuji; "Studies on Whale Lipase. I--Lipase of the Pancreas of Little Finner," by Yoshio Ishihara; "New Type Otter-Boards for Mid-Water Trawl," by Kiichiro Kobayashi and Naoichi Inoue; and "Notes on the Blood of Masu Salmon during Inshore Migration with Special Reference to the Osmoconcentration."

Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 11, no. 2, August 1960, 46 pp., illus., printed in Japanese with summaries in English. Faculty of Fisheries, Hokkaido University, Hakodate, Japan. Contains, among others, the following papers: "I--Acid-Soluble Nucleotides in Muscle of Marine Invertebrates. Effects of Storing Temperature upon the Content of Muscular Nucleotides of Some Seashells (1)," by Ken-ichi Arai; "Studies on the Biology of the Sea Urchin. II--Size at First Maturity and Sexuality of Two Sea Urchins, Strongylocentrotus nudus and S. intermedius," by Akira Fuji; "Studies on the Biology of the Sea Urchin. III--Reproductive Cycle of Two Sea Urchins, Strongylocentrotus nudus and S. intermedius, in Southern Hokkaido," by Akira Fuji; and "Chemical Studies on Marine Algae. XIV--On a New Amino Acid, 'chondrine', Isolated from the Red Alga Chondria crassicauiis," by Mitsuo Kuriyama, Mitsuzo Takagi, and Kiichi Murata.

Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 11, no. 3, November 1960, 112 pp., illus., printed in Japanese with summaries in English. Faculty of Fisheries, Hokkaido University, Hakodate, Japan. Contains, among others, the following papers: "Studies on Fixed Nets in Funka Bay. 4--A Study on the Efficiency of the Secondary Bag Nets for Catching Yellowtail," by Hideo Nakamura, Sakuzo Nishiyama, and Giichi Kawasaki; and "Mechanical Properties of Marine Products. I--Tensile Strength and Elongation of Dried Squid," by Tetsuo Ohkawa.

Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 11, no. 4, February 1961, 49 pp., illus., printed in Japanese with summaries in English. Faculty of Fisheries, Hokkaido University, Hakodate, Japan. Contains, among others, the following papers: "II. Acid-Soluble Nucleotides in Muscle of Marine Invertebrates. Effects of Storing Temperature upon the Content of Muscular Nucleotides of Some Seashells (2)," by Ken-ichi Arai; "Studies on the Biology of the Sea Urchin. IV--Histological Observation of the Food Canal of Strongylocentrotus intermedius," by Akira Fuji; and "Hydrocarbons in Pollack Liver Oil," by Isami Tsujino.

Memoirs of the Faculty of Fisheries, Kagoshima University, vol. 9, December 1960, 114 pp., illus., printed in Japanese with English abstracts. Faculty of Fisheries, Kagoshima University, Kagoshima, Japan. Includes among others, these articles: "Improvement in Efficiency of Icing of the Catch in a Fishing Boat. I.--The Bacterial Contamination in a Fish Hold and the Sterilizing Effect of a Germicidal Lamp," by Muneo Sameshima and Kaname Saito; "Study on Vitamin B Content in Pyloric Caecum of Skipjack. III.--On Vitamin B_6," by Daiichi Kakimoto; "Fishing-Ground Constitutional Studies on the White Marlin, Marlina marlina (Jordan & Hill), over the East China Sea. II.--On the Characteristics of Marine Environments of the White Marlin on the Fishing-Grounds," by Tomokazu Morita; "Studies on the Relation between the Fluctuation in Catch and the Environmental Factors of the Principal Fishes in Kagoshima Bay. IV.--On the Young Horse-Mackerel, Trachurus japonicus," by Toyotaka Tanoue; "Further Report on the Physical Analysis of the Fixed-Fishing-Net Resistance," by Masaji Kanamori; "Occurrences of Maxima Pearl Oyster in the Oshima Strait, Amami-Oshima, a Northern Limit of the Distribution," by Seija K. Wada, in English; and "Studies on Some Marine Algae from Southern Japan. III," by Takesi Tanaka, in English.

KENYA:

"A Study of a Small Basket-Trap River Fishery in Kenya," by Vernon D. Van Someren, article, East African Agricultural Journal, vol. 24, no. 4, 1959, pp. 257-267, printed. East African Agricultural Journal, Government Printer, Nairobi, Kenya.

LAMPREY:

"Estimates of Length of Larval Life in Three Species of Lamprey Found in Britain," by T. H. MacDonald, article, The Journal of Animal Ecology, vol. 28, no. 2, 1959, pp. 293-298, printed. The Journal of Animal Ecology, Blackwell Scientific Publications, 24 Broad St., Oxford, England.

"Vred, Nanosimy Minogami Rybnym Zapasam" (Damage to Fish Supply Caused by Lamprey), by V. A. Abakumov, article, Rybnoe Khoziaistvo, no 4, April 1959, pp. 32-33, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U. S. S. R.

LANGOSTINOS:

"Langostino: 'Sleeper' in the Seafood Market," article, Quick Frozen Foods, vol. 23, December 1961, pp. 129-131,135, printed. E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

LIGHT FISHING:

"Study on the Disposition of Fish Towards Light. No. 4--The Strength of Illumination Comfortable to Mackerel and Trachurous japonicus," by Yutaka Imamura, article, Journal of Tokyo University of Fisheries, vol. 45, no. 2, March 1959, pp. 185-193, printed. Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Minato-ku, Tokyo, Japan.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

LINGCOD:

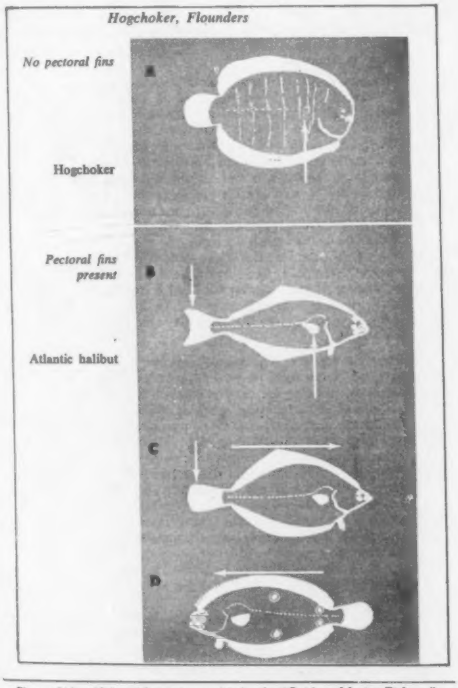
"Further Results from Tagging Experiments on Lingcod," by B. M. Chatwin, article, Progress Reports of the Pacific Coast Stations, no. 107, 1957, pp. 19-21, printed. Fisheries Research Board of Canada, Pacific Fisheries Experimental Station, 898 Richards St., Vancouver B. C., Canada.

MARINE BORERS:

Rasprostranenie Drevotochtsev v Moriakh, SSSR (Distribution of Marine Borers in the Seas of the U.S.S.R.), by P. I. Raibchikov, 266 pp., illus., processed. (Translated from Russian, Akademiia Nauk SSSR, Institut Okeanogogii, Moscow, 1957, pp. 1-229). Technical Services Branch, Division of Oceanography, U. S. Navy Hydrographic Office, Washington, D. C., 1960.

MARINE FISHES:

Guide to Marine Fishes, by Alfred Perlmutter, 431 pp., illus., printed, $6.50. New York University Press, Washington Square, New York 3, N. Y., 1961. To our knowledge, this is the first complete guide to employ identifying silhouettes of all the marine fish



Type of identifying silhouettes used in book, "Guide to Marine Fishes."

and fish-like vertebrates that inhabit the coastal temperate-water zone from Cape Cod to Cape Hatteras, together with some of the more common stragglers from North of Cape Cod, south of Cape Hatteras, and from the deep waters offshore. It is written specifically for the fisherman and amateur biologist. In the first part of the book, 616 labeled silhouettes enable the reader to identify the unknown fish through easily distinguishable characteristics. Identification of the various species is based primarily on easily seen external characters which are employed for rapid identification of fish in the field. The silhouettes of the fish show the identifying characters. This makes it possible for even the amateur to identify most species, not only in the adult sizes but also in the young, at least in those sizes most likely to be seen. The second part contains 260 species and gives a brief description of all of them, plus information on the distribution, color, life history, and economic importance of the fish identified in the first section. Also, both the most popular of the common names and the most generally accepted scientific name are given for each species. Bound with water-resistant cover, the book can be taken along on fishing trips to help identify the catch on the spot.

MARINE MAMMALS:

O Povedenii i Zvukovoi Signalizatsii Kitoobraznykh (On the Behavior and Sound Communication of Cetaceans), by A. G. Tomilin, 44 pp., illus., processed. (Translated from Russian, Transactions of the Institute of Oceanology, Academy of Sciences U. S. S. R., vol. 18, pp. 28-47, Moscow, 1955.) Technical Services Branch, Division of Oceanography, U. S. Navy Hydrographic Office, Washington, D. C., 1960.

MENHADEN:

"Lateral Lines and an Undescribed Sensory Area on the Head of the Gulf Menhaden, Brevoortia patronus," by Gordon Gunter and William J. Demoran, article, Copeia, no. 1, March 17, 1961, pp. 39-42, illus., printed. American Society of Ichthyologists and Herpetologists, 34th St. and Girard Ave., Philadelphia 4, Pa.

NETS:

"Die Entwicklung der Deutschen Lachstreibnetzfischerei und die Erprobung Neur Treibnetze" (The Development of German Driftnets for Salmon and the Test of New Types of Nets), by F. Thurow, article, Das Fischerblatt, vol. 7, no. 9, 1959, pp. 197-201, illus., printed in German. Landesfischerei-Verband Schleswig-Holstein, 108 Holstenstrasse, Kiel, Germany.

"Mery po Predotvrashcheniiu Avarii Drifternykh Poriadkov" (Measures for Preventing Damages to Driftnets), by N. K. Piaterikin, article, Rybnoe Khoziaistvo, vol. 34, no. 11, 1958, pp. 30-38, illus., printed in Russian. VNIRO Glavniiproekta, pri Gosplanie, Moscow, U. S. S. R.

"Sokobikiamiyo Sho Sokuteiki o Shiyo Shite no Issobiki Kisensokobikiami no Sokutei Jikken" (Results of Measure Experiments by Several Meters on Net Shape of One-Boat Trawl Net--Danish Seine Net), by C. Hamuro, article, Technical Report of Fishing Boat, no. 13, 1959, pp. 55-59, illus., printed in Japanese with English abstracts. Fishing Boat Laboratory, Fisheries Agency, Chiyoda-ku, Tokyo, Japan.

Supplement to Relative Selectivity of Freshwater Commercial Fishing Devices Used in Louisiana, by James Davis and Lloyd Posey, Jr., 144 pp., printed. Louisiana Wildlife and Fisheries Commission, Wild-Life and Fisheries Bldg., 400 Royal St., New Orleans 16, La.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

NORWAY:

"Beskatningen av Fiskebestandene i Vare Nordlige Farvann--Norsk og Internasjonalt Arbeid for a Motvirke Overfiske" (Harvest of Fish Population in Our Northern Waters--Norwegian and International Work to Prevent Overfishing), by A. Hylen and G. Saetersdal, article, Fiskets Gang, vol. 47, no. 7, February 16, 1961, pp. 151-157, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergan, Norway.

"F/F Johan Hjort's Tokt til Vest-Afrika 1960" (F/F Johan Hjort Cruise to West Africa, 1960), by Finn Devold, article, Fiskets Gang, vol. 47, no. 11, March 16, 1961, pp. 236-241, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Fiskeflaten 1960" (The Fishery Fleet 1960), by Sverre Mollestad, article, Fiskets Gang, vol. 47, no. 8, February 23, 1961, pp. 171-176, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Forekomst av Egg og Yngel av Fisk i Vest-og Nord-Norske Kystog Bankfarvann Varen 1960" (Fish Eggs and Larvae in the Norwegian West and North Coastal Waters and Fishing Banks in Spring 1960), by Kr. Fr. Wiborg, article, Fiskets Gang, vol. 47, no. 9, March 2, 1961, pp. 190-195, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

OCEANOGRAPHY:

Searchers of the Sea: Pioneers in Oceanography, by Charles Michael Daugherty, 160 pp., illus., by Don Miller, printed, $3. Viking Press, Inc., 18 E. 48th St., New York 17, N. Y. About famous explorers of the sea, from the Argonauts to the Piccards.

"The Seasonal Variation in Oceanic Production as a Problem in Population Dynamics," by D. H. Cushing, article, Journal du Conseil Permanent International pour l'Exploration de la Mer, no. 24, 1959, pp. 455-464, printed in French and English. Conseil Permanent International pour l'Exploration de la Mer, Charlottenlund-Slot, Denmark.

ODORS:

"Fishy Problem," article, Industrial and Engineering Chemistry, vol. 32, December 1960, pp. 38A-39B printed. Industrial and Engineering Chemistry, The American Chemical Society, 1155 16th Street NW., Washington 6, D. C.

OILS AND FATS:

"Further Studies of Cholesterol, Fats and Fatty Acids," article, Nutrition Review, vol. 18, 1960, pp. 146-147, printed. The Nutrition Foundation Inc., 99 Park Ave., New York 16, N. Y.

OKLAHOMA:

"An Annotated List of the Fishes of Lake Texoma, Oklahoma and Texas," by Carl D. Riggs and Edward W. Bonn, article, The Southwestern Naturalist, vol. 4, no. 4, 1959, pp. 157-168, printed. Southwestern Naturalist Assn., Dallas, Tex.

OYSTER SHELLS:

"Copper, Nickel, and Cobalt Content of Oyster Shells," by R. S. Young, article, Journal of Agriculture and Food Chemistry, vol. 8, November-December 1960, pp. 485-486, printed. Journal of Agriculture and Food Chemistry, American Chemical Society, 1801 K St. NW., Washington 6, D. C.

OYSTERS:

"New Glycolipide in the Oyster. V--The Nitrogenous Components and Structure of the Glycolipide," by Yasuo Nakazawa, article, Journal of Biochemistry (Tokyo), vol. 46, 1959, pp. 1579-1585, printed. Charles E. Tuttle Co., Rutland, Vt.

PARASITES:

Parasites in Summer-Caught Pacific Rockfishes, by John Liston, John Peters, and Joseph A. Stern, Contribution No. 47, 10 pp., illus., printed. College of Fisheries, University of Washington, Seattle, Wash., 1958.

Some Aspects of the Zoogeography of the Digenetic Trematodes of Shallow-Water Fishes of the Gulf of Mexico, by Albert K. Sparks, Contribution No. 62, 13 pp., printed. College of Fisheries, University of Washington, Seattle, Wash., 1960.

PEARLS:

Studies of Pearl, by S. Kobayashi and N. Watabe, illus., printed in Japanese with English table of contents. Gihodo, Tokyo, Japan. A comprehensive review of current knowledge on pearl culture, biological implications, and studies related thereto.

PERU:

"Industrie des Conserves de Poisson au Perou" (Canning Industry for Fish in Peru), article, Revue de la Conserve, vol. 15, no. 6, October 1960, pp. 256-260, printed in French. Revue de la Conserve, 1 Rue de la Reale, Paris 1, France.

POLAND:

The following English translations of foreign language articles are available from the Office of Technical Services, Department of Commerce, Washington, D. C., at 50 cents each. Order by OTS number.

Investigation on the Influence of Sodium Nitrited Ice on the Keeping Qualities of Baltic Cod, by J. Borowik and others, OTS 60-21534, 27 pp., illus., processed. (Translated from Polish Prace Morskiego Instytutu Rybackiego, no. 9, 1957, pp. 633-679.)

An Investigation of Polan, Ramie, Cotton and Hemp Fishing-Net Fabrics from the Standpoint of Fishing Technology, by Stefan Wojan, OTS 60-21373, 27 pp., illus., processed. (Translated from Polish Prace Morskiego Instytutu Rybackiego W. Gdyni, no. 9, 1957, pp. 597-632.)

POLLUTION:

"Marine Pollution," by D. J. Reish and J. L. Barnard, article, Water and Sewage Works, vol. 106, no. 6, 1959, pp. 259-262, printed. Water and Sewage Works, Scranton Publishing Co., 185 North Wabash Ave., Chicago 1, Ill.

POPULATION STUDIES:

"On the Confidence Limits Corresponding to the Estimate Obtained by DeLury's Logarithmic Catch-Effort Method," by Yukio Nose, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 12, 1959, pp. 953-956, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

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Symposium on Evaluation of Fish Populations in Warm-Water Streams, 118 pp., printed. Iowa Cooperative Fisheries Research Unit, Iowa State College, Ames, Iowa, 1957.

PRESERVATION:

Some Applications of Okra in the Food Industries, by William Saenz, Contribution No. 299, 4 pp., illus., printed. (Reprinted from Proceedings of the Florida State Horticultural Society, vol. 73, 1960, pp. 297-300.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla. This article covers among other topics, a preliminary experiment to preserve fresh shrimp in okra ice. Okra solutions used as a glaze on shrimp protected the product against desiccation and discoloration twice as long as the plain water glaze. The experiment indicated that the treatment offered some protection against development of decomposition odors. Work is now in progress to verify the findings of the preliminary experiment, to find optimum concentrations for the okra ice, and to explore the antioxidant properties of okra for the preservation of fatty fish and the protection of colored fish against oxidative discoloration.

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Preservatives for Scrap Fish, by G. A. Carpenter and June Olley, Torry Technical Paper No. 2, 1960. Torry Research Station, Aberdeen, Scotland.

PROCESSING:

"Fish Processing in Poland," by W. G. Cass, article, Food Manufacture, vol. 35, June 1960, pp. 238-239, 261, printed. Food Manufacture, Leonard Hill Ltd., 9 Eden St., London NW1, England.

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"Proteins in Fish Muscle, 16--Adenosinetriphosphatase Activity of Cod Myosin and Actomyosin," by J. R. Dingle and J. A. Hines, article, Canadian Journal of Biochemistry and Physiology, vol. 38, December 1960, pp. 1437-1447, printed. Canadian Journal of Biochemistry and Physiology, Division of Administration, National Research Council, Sussex St., Ottawa, Canada.

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"Quality of Flatfish from Hakodate. Part 3--Factors Deciding the Quality. 6--Relations between the Quality and the Amino Acid Composition of the Muscle Extractives," by Keiichi Oishi, article, Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 10, February 1960, pp. 319-331, printed in Japanese with English summaries. Faculty of Fisheries, Hokkaido University, Kameda-Machi, Hakodate, Japan.

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"The Ways in Which Radiation Damage Appears in Early Development of Fish," by A. A. Neifakh and N. N. Rott, article, Doklady, Akademii Nauk, SSSR, vol. 119, no. 2, 1958, p. 261, printed. Doklady Akademii Nauk SSSR, Podsosenski per. 21, Moscow B-64, U. S. S. R.

RADIOACTIVE ISOTOPES:

Application of Radioactive Isotopes in the Food and Fishing Industries and in Agriculture (a portion of the Proceedings of the All-Union Scientific and Technical Conference on the Application of Radioactive Isotopes, Moscow, 1957), 94 pp., illus., printed, English translation, $30.00 (single report $12.50). Consultants Bureau, Inc., 227 W. 17th St., New York 11, N. Y., 1959. Of particular fishery interest are the reports on: "Results and Prospects of Applying Radioactive Carbon (C^{14}) to the Study of the Circulation of Organic Matter in Waters," by Iu. I. Sorokin; "Research on the Biological Productivy of Waters by Means of Radioisotopes," by V. I. Zhadin, A. G. Rodina, and A. S. Troshin; "On Methods of Tagging Fish with Radioactive Calcium," by N. P. Rudakov; and "The Application of P^{32} and Ca^{45} to the Study of Some Aspects of Phosphorus and Calcium Metabolism in Young Carp and Sturgeons," by M. P. Bogoiavlenskaia and I. A. Shekhanova.

RED TIDE:

"The Red Tide of 1958 at Ensenada, Baja California, Mexico," by Rudolf Stohler, article, Veliger, vol. 2, no. 1, 1959, pp. 32-35, printed. Veliger, Northern California Malacozoological Club, Berkeley, Calif.

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"Oceanographic Survey Ship Delivered," article, Marine Engineering, vol. 65, no. 6, 1960, pp. 70-76, illus., printed. Simmons-Boardman Publishing Corp., 30 Church St., New York 7, N. Y.

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"Adrenocorticosteroids in Salmon Plasma (Oncorhynchus nerka)," by J. G. Phillips, W. N. Holmes, and Philip K. Bondy, article, Endocrinology, vol. 65, 1959, pp. 811-818, printed. Endocrinology, Charles C. Thomas, 301-27 E. Lawrence Ave., Springfield, Ill.

"Biochemical Studies on Sockeye Salmon During Spawning Migration. XIII--The Distribution of Phosphorus Compounds, Creatine and Inositol in the Major Tissues," by V. M. Chang, H. Tsuyuki, and D. R. Idler, article, Journal of the Fisheries Research Board of Canada, vol. 17, July 1960, pp. 565-582, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer & Controller of Stationery, Ottawa, Canada.

"Growth of Marked Silver Salmon (Oncorhynchus kisutch) of the 1950 Brood in Puget Sound," by George H. Allen, article, Transactions of the American Fisheries Society, vol. 88, no. 4, 1959, pp. 310-318, printed. American Fisheries Society, P. O. Box 429, McLean, Va.

Main-Stem and Tributary Sampling of Red Salmon Scales for Population Studies, by Ted S. Y. Koo and Howard D. Smith, Contribution No. 58, 10 pp., illus., printed. College of Fisheries, University of Washington, Seattle, Wash., 1960.

"The 1955-1956 Silver Salmon Run into the Tenmile Lakes System," by Alfred R. Morgan and Kenneth A. Henry, article, Research Briefs, vol. 7, no. 1, 1959, pp. 57-77, printed. Fish Commission of Oregon, Portland, Oreg.

Pacific Salmon in International Waters, by Allan C. Hartt, Contribution No. 78, 7 pp., illus., printed. College of Fisheries, University of Washington, Seattle, Wash., 1960.

Predation of Young Coho Salmon on Sockeye Salmon Fry at Chignik, Alaska, Contribution No. 42, 2 pp., illus., printed. College of Fisheries, University of Washington, Seattle, Wash., 1960.

Use of Dynamite to Recover Tagged Salmon, by Richard W. Tyler, Contribution No. 75, 9 pp., illus., printed. College of Fisheries, University of Washington, Seattle, Wash., 1960.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

SARDINES:

Fangmethoden in der Sardinenfischerei (Catching Methods in the Sardine Fisheries), by A. von Brandt, 92 pp., illus., processed in German. (Reprinted from Protokolle zur Fischereitechnik, Heft 26, Bd. 6, pp. 65-115.) Institut fur Netz-und Materialforschung der Bundesforschungsanstalt fur Fischerei, Hamburg, Germany. A paper submitted to the FAO World Scientific Meeting on the biology of sardines and related species, Rome, September 14-21, 1959. Covers the catching of pelagic shoal fish; useful equipment and catching methods for the sardine fishery; development of nets, trawls, and hooks; and sardine catching methods used throughout the world.

SCALED-FIN GRUNTS:

Western Atlantic Fishes of the Genus HAEMULON (Pomadasyidae): Systematic Status and Juvenile Pigmentation, by Walter R. Courtenay, Jr., 84 pp., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 1, March 1961, pp. 66-149.) The Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla. These fish, referred to as the scaled-fin grunts, include the nominal genera Bathystoma and Brachygenys which are here considered synonyms of Haemulon.

SEA CUCUMBERS:

"Studies on the Proteins of the Meat of Sea Cucumber (Stichopus japonicus Selenka)," by E. Tanikawa, article, Memoirs of the Faculty of Fisheries, Hokkaido University, vol. 3, no. 1, August 1955, printed. Faculty of Fisheries, Hokkaido University, Kamedа-Machi, Hakodate, Japan.

SEA TROUT:

"Distribution and Abundance of Gray Weakfish in the York River System, Virginia," by W. H. Massmann, J. P. Whitcomb, and A. L. Pacheco, article, Transactions of the Twenty-third North American Wildlife Conference, 1958, pp. 361-369, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

SEAWEED:

"New Species of Gelidium and Pterocladia from the Pacific Coast of the United States and the Hawaiian Islands," by N. H. Loonis, article, All-Hancock Foundation Occasional Paper No. 24, pp. 1-10, illus., printed. The University of Southern California Press, Los Angeles, Calif., 1960.

SHARKS:

"Pigghaundersokelser i Omradet Krakenes--Sandnessjoen i Januar 1961" (Shark Research in the Area Krakenes--Sandnessjoen, January 1961), by Olav Aasen, article, Fiskets Gang, vol. 47, no. 14, April 6, 1961, pp. 296-297, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

SMALL BUSINESS MANAGEMENT:

Cost Control Problems of Small Manufacturers, by William C. Flewellen, Jr., Management Research Summary No. 3, 4 pp., processed. Small Business Administration, Washington 25, D. C., November 1960. A summary of a report, titled "An Analysis of Cost Control Problems of Small Manufacturers in Alabama." This study is directed at the cost control problems of the small manufacturing firm. It presents selected accounting control techniques and analyses which were found useful in the day-to-day operations of 15 small manufacturing firms in 4 industrial groups. In conducting the research, attention was centered on three major areas: analysis of the balance sheet and income expense statement; budgeting, with emphasis on control of costs; and special problems faced by small businessmen. Investigation sought to disclose the adequacy or inadequacy of (1) bookkeeping systems and payroll procedures, (2) inventory and receivable controls, and (3) controls over waste and scrap. In addition, the uses of statement analysis and budgeting were investigated, as were the various reports made to management.

Expanding Distribution and Warehousing in Alaska, by Vernon R. Kiely, Management Research Summary No. 5, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "Economic and Business Situation in Alaska, with Special Reference to Wholesale and Retail Trade in Fairbanks and Anchorage." This research study found that retailing, wholesaling, and warehousing in Alaska are inseparably bound with its economic background. There is a definite need for an increase in wholesaling activities. Costs are an important factor in expansion and are influenced strongly by the labor force, the length of supply lines, climatic conditions, and transportation limits. The amount of loan capital available in Alaska has never met the demand.

Facts about Small Business Financing, by Olin S. Pugh, Management Research Summary No. 10, 4 pp., processed. Small Business Administration, Washington 25, D. C., Februray 1961. A summary of a report, titled "Financing 689 Small Business Firms in South Carolina, 1958-1959: A Study of the Sources, Availability, and Terms of Financing for Small Business Firms in South Carolina." The principal purpose of the survey was to analyze the sources and terms of credit extended to small businessmen. The small business must always rely heavily upon personal investment as a source of equity funds. Within the structure of small business, it was found that larger loans have lower rates. An educational program built around both re[illegible]nents and capabilities of small business, desig[illegible]r and reaching all borrowers and lenders, co[illegible] go far in alleviating many of the conditions or problems of small business financing.

Problems of Small Retailers, by J. L. McKeever, Management Research Summary No. 9, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "A Study of the Problems of Small Retailers in Wyoming." The extension of credit, with slow payment by customers, was the financial problem most frequently mentioned by the businessmen cooperating in this study. A build-up of accounts receivable to the detriment of cash balances inevitably leads to a shortage of capital for the financing of other basic business functions. Most problems concerning labor dealt with competence, initiative, attitudes, and productivity of employees.

Small Plant Turnover and Failure, by William N. Kinnard, Jr., and Zenon S. Malinowski, Management Research Summary No. 4, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "The Turnover and Mortality Experience of Manufacturing Firms in the Hartford, Connecticut, Economic Area, 1953-1958." This report is based primarily on an

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intensive study of manufacturing turnover and mortality in the Hartford, Connecticut, economic area. It was found that small manufacturing firms are not necessarily more liable to turnover and failure than large manufacturers. The small manufacturer can minimize his risk of failure or loss by paying close attention to the mortality pattern among industries in his area.

The Squeeze-Out in Small Business Ownership, by F. Hodge O'Neal and Jordan Derwin, Management Research Summary No. 7, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1961. A summary of a report, titled "Expulsion or Oppression of Business Associates: 'Squeeze-Outs' in Small Enterprises." A "squeeze-out" is the use of strategic position, management powers, or legal device by some owners in a business enterprise to eliminate other owners or to deprive them unfairly of income or advantages. The primary means through which small business managers can avoid squeeze plays is competent legal counsel who will foresee problems that might arise and provide methods to forestall them. Minority interests could be given greater protection through State legislative action.

SMELT:

"Variation in the Life History of the American Smelt in Inland Waters of Maine," by Robert S. Rupp, article, Transactions of the American Fisheries Society, vol. 88, no. 4, 1959, pp. 241-252, printed. American Fisheries Society, P. O. Box 429, McLean, Va.

SMOKED FOODS:

Determining the Depth of Penetration of Smoke Components in Smoking of Food, by V. I. Kurko, U.S.S.R. Patent No. 127,905, April 12, 1960, printed in Russian. Biuro Ekspertizy i Registratsii Izobretenii, Moscow, U. S. S. R.

SPILLWAYS:

"Iz Opyta Stroitel'stva i Ekspluatatsii Uproshchennykh Vodoslivov" (Building and Operational Experience with Simplified Spillways), By A. G. Savitskiy, article, Meteorologiia i Gidrologiia, no. 10, 1958, pp. 48-49, printed in Russian. Meteorologiia i Gidrologiia, Moscow, U. S. S. R.

SPOILAGE:

The Spoilage of Pacific Coast Rockfish. I--Spoilage in Ice Storage, by J. Liston, Julia G. Chapel, and J. A. Stern, Contribution No. 92, 4 pp., illus., printed. College of Fisheries, University of Washington, Seattle, Wash., 1961.

SQUID:

"The Purification and Properties of a Ribonuclease from Squid," by Mary Edmonds and Jay S. Roth, article, Archives of Biochemistry and Biophysics, vol. 89, August 1960, pp. 207-212, printed. Archives of Biochemistry and Biophysics, c/o Academic Press Inc., New York 3, N. Y.

"Studies on the Tropomyosin of Squid," by K. Yoshimura, article, Memoirs of the Faculty of Fisheries, Hokkaido Univeristy, vol. 3, no. 2, December 1955, printed. Faculty of Fisheries, Hokkaido University, Kamedа-Machi, Hakodate, Japan.

STRIPED BASS:

"Field Tests of Petersen, Streamer, and Spaghetti Tags on Striped Bass, Roccus saxatilis (Walbaum)," by William S. Davis, article, Transactions of the American Fisheries Society, vol. 88, no. 4, 1959, pp. 319-329. American Fisheries Society, P. O. Box 429, McLean, Va.

"Problems Relative to the Atlantic Coast Striped Bass Fishery and Status of its Biological Research," by James E. Sykes, article, Transactions of the Twenty-third North American Wildlife Conference, 1958, pp. 370-377, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

"The Striped Bass in Relation to the Multiple Use of the Roanoke River, North Carolina," by William W. Hassler, article, Transactions of the Twenty-third North American Wildlife Conference, 1958, pp. 378-391, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C.

TAGGING:

A Technique for Mass-Marking Fish by Means of Compressed Air, by C. F. Jackson, Technical Circular No. 17, 8 pp., printed. New Hampshire Fish and Game Department, Concord, N. H., 1959.

TIDES:

Tide Tables--East Coast North and South America including Greenland, 1962, 283 pp., printed, $1. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., June 1961. High and low water predictions.

TRADE LIST:

The Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade list. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at $2 each.

Canneries and Frozen Foods-Producers and Exporters--Denmark, 9 pp. (April 1961). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes canners and exporters of canned fish and shellfish. Also processors of frozen fishery products. The principal markets for canned fishery products are the United States, United Kingdom, Sweden, Austria, and France.

TRAWLERS:

"O Dal'neishem Sovershenstvovanii Bol'shikh Morozil'nykh Rybolovnykh Traulerov s Kormovym Traleniem" (On Further Improvement of Large Freezing-Fishing Stern Trawlers), by S. L. Fridman, article, Rybnoe Khoziaistvo, vol. 35, no. 6, 1959, pp. 38-51, printed in Russian, VNIRO Glavniiproekta pri Gosplanie, Moscow, U. S. S. R.

"The First Large Norwegian Stern Trawler Delivered," article, Norwegian Fishing and Maritime News, vol. 8, no. 1, 1961, pp. 9, 11, 13, illus., printed. Norwegian Fishing and Maritime News, P. O. Box 740, Slottsgt. 3, Bergen, Norway. Discusses the main characteristics and capacities of Norway's first stern Trawler Hekktind, a 151-foot vessel designed for operation in Arctic and North Atlantic waters. The technical equipment and results of trips already taken by the Norwegian vessel are also discussed in detail.

TRAWLING:

"Kontrol Napolneniia Trala Ryboi" (Indication of Catches in Trawling), by N. V. Vershinskii and

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others, article, Rybnoe Khoziaistvo, vol. 34, no. 7, 1958, pp. 34-40, illus., printed in Russian. VNIRO Glavniiproekta pri Gosplanie, Moscow, U. S. S. R.

"Trawling for Herring in the Bay of Fundy," by G. J. Gillespie, article, Trade News, vol. 13, no. 10, April 1961, pp. 3-7, illus., processed. Information and Educational Service, Department of Fisheries, Ottawa, Canada. Describes experimental trawling for herring in the Bay of Fundy sponsored by the Canadian Department of Fisheries and the New Brunswick Fisheries Division. The project was designed to determine if midwater and bottom trawling for herring could provide employment for inshore trawlers during the winter season when groundfish are scarce. In addition to the basic electronic instrument--a conventional white-line recorder--used in the experimental project, a new electronic device was added that removes any guesswork with respect to the depth of the trawl. The new device was a net-sounder which consisted of a transducer mounted in a kite on the trawl's headline. Along with the conventional transducer on the vessel's hull, the net-sounder was linked by cable to the electronic recorder. Employment of this new piece of sounding equipment in the Bay of Fundy marked the first time it has been used on the Atlantic seaboard. The net-sounder is a European development and has been used in those fishing waters with singular success.

TRAWLS:

"Pribory dlia Izmereniia Natiazhenii v Otdel'nykh Detaliakh Trala" (Instruments for Measuring Tension in Various Parts of Trawl), by V. K. Savasov, article, Rybnoe Khoziaistvo, vol. 34, no. 8, 1958, pp. 47-50, illus., printed in Russian. VNIRO Glavniiproekta, pri Gosplanie, Moscow, U. S. S. R.

TROUT:

"An Analysis of Sixty-five Years of Fishing in a Trout Pond Unit," by H. R. McCrimmon and A. H. Berst, article, The Journal of Wildlife Management, vol. 25, no. 2, April 1961, pp. 168-178, illus., printed. The Wildlife Society, 5921 Anniston Rd., Bethesda 14, Md.

"Cystoma Found in the Liver of Rainbow Trout, Salmo gairdnerii irideus Gibbons," by Yoshiharu Honma and Kaoru Shirai, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 24, no. 12, 1959, pp. 966-970, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Minato-ku, Tokyo, Japan.

Managing Farm Ponds for Trout Production, by Alfred W. Eipper, Cornell Extension Bulletin no. 1036, 31 pp., printed. New York State College of Agriculture, Cornell University, Ithaca, N. Y., 1960.

"Trout Growth in Hatcheries," by David C. Haskell, New York Fish and Game Journal, vol. 6, no. 2, 1959, pp. 204-239, printed. New York Fish and Game Journal, N. Y. Conservation Dept., Albany, N. Y.

TUNA:

"El Bonito del Norte, o Albacora y Los Mercados Exteriores" (The Northern Bonito, or Albacore, and the Foreign Market), article, Industria Conservera, vol. 27, no. 261, March 1961, pp. 64-66, printed in Spanish. Industria Conservera, Calle Marques de Valladares, 41, Vigo, Spain.

"On the Cause of Annual Variation of Fishing Condition of Bigeyed Tuna in the Area from Marshall Islands to Palmyra Island. I--On the Annual Variation of Fishing Condition; II--Comparison between 1956 and 1958 in Regard to Fishing Period and Fishing Ground and Relation between Fishing Condition and Fishing Effort; III--Relation between Monthly and Annual Variations of Fishing Condition and Those of Surface Water Temperature of the Fishing Ground; and IV--Relation between Annual Variation of Rate-of-Catch and that of Body-Length or of Age Frequency," by Jun Nakagome, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, April 1960, pp. 401-410, printed in Japanese with English summaries. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

"Chemical Composition of Raw, Precooked, and Canned Tuna. I--Core Sampling Methods," by Clarence J. Carlson, Claude E. Thurston, and Maurice E. Stansby, article, Food Technology, vol. 14, October 1960, pp. 477-479, printed. Food Technology, The Garrard Press, 510 North Hickory, Champaign, Ill.

Fabrication des Conserves de Thon du Maroc (Canning of Tuna in Morocco), by R. Meesemaecker and Y. Sohier, 27 pp., illus., printed in French. (Reprinted from Revue de la Conserve, December 1960 and January 1961.) Laboratoire du Froid et de la Conserve, 70, Allee des Jardins, Ain-Sebaa, Morocco.

"Hermaphroditic Skipjack," by Richard N. Uchida, article, Pacific Science, vol. 15, no. 2, 1961, pp. 294-296, printed. Pacific Science, University of Hawaii, Honolulu 14, Hawaii.

"Lipids of the Muscle of Tuna, Thunnus orientalis. III--Lecithins of the Dark-Colored and Ordinary Muscles," by Hisanao Igarashi, Koichi Zama, and Muneo Katada, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, 1957, pp. 273-277, printed. (Translated by George Kudo, U. S. Bureau of Commercial Fisheries, Technological Laboratory, Seattle, Wash.) Japanese Society of Scientific Fisheries c/o Tokyo University of Fisheries, Shiba-kaigandori, 6-chome, Tokyo, Japan.

"Lipids of the Muscle of Tuna, Thynnus orientalis. VI--Sphingolipids of Dark-Colored and Ordinary Muscles," by Muneo Katada, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, April 1960, pp. 421-424, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-Ku, Tokyo, Japan.

Scripps Tuna Oceanography Research (STOR) Program (Final Report, June 21, 1957-June 30, 1960), by Maurice Blackburn, 88 pp., illus., processed. University of California, Scripps Institution of Oceanography, La Jolla, Calif., August 5, 1960.

"The Tuna Season in N. S. Wales," by Pat Warren, article, Fisheries Newsletter, vol. 20, no. 4, April 1961, pp. 9, 27, printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. Discusses the tuna season in New South Wales beginning July 1960. Covers the location of the main body of fish in the Bermagui and northeast Eden areas and the heartening results

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obtained, quota fishing, the accomplishments of the Eden cannery, and the activities of the Tuna Boat Owners' Association.

UNION OF SOUTH AFRICA:
The South African Fishing Industry, by Peter Hjul, 12 pp., illus., printed. Standard Bank of South Africa Limited, Johannesburg, Union of South Africa, 1961. This booklet, well illustrated in color, describes the development of South Africa's fisheries. It discusses ocean currents abounding in nutrients, industrialization of the fisheries, establishment of large fishing companies, and record landings of the past three years. Also discussed are the growth of the pelagic shoal fishery, operation of canneries and reduction plants, Cape West coast fishery production, and marketing organizations. Covered briefly are the spiny lobster fishery, trawling industry, line fishing, and possible future landings.

U.S.S.R.
"The All-Union Conference on Agricultural Fishing," article, Vestnik Vysshei Shkoly Sovetskaya Nauka, no. 5, 1957, p. 95, printed in Russian. Vestnik Vysshei Shkoly Sovetskaya Nauka, Moscow, U. S. S. R.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE FROM THE OFFICE OF TECHNICAL SERVICES, DEPARTMENT OF COMMERCE, WASHINGTON, D. C., AT 50 CENTS EACH. ORDER BY OTS NUMBER.

Contribution to the Study of Pacific Ocean Moridae (Pisces, Gadiformes), by T. S. Rass, OTS 60-51040, 6 pp., illus., processed. (Translated from Russian Akademiya Nauk SSSR, Trudy Instituta Okeanologii, vol. 11, 1954, pp. 56-61.)

Increasing the Effectiveness of Trawlboards by a Slotted Design which Produces the Necessary Moments of Force, by I. R. Matrosov, 10 pp., illus., processed. (Translated from Russian Rybnoe Khozyaistvo, vol. 34, no. 9, 1958, pp. 40-49.)

Means of Restoring and Increasing the Schools of Kamchatka Salmon, by F. V. Krogius and E. M. Krokhin, OTS 60-51039, 12 pp., processed. (Translated from Russian Akademiya Nauk SSSR, Ikhtiologicheskaya Komissiya, Trudy Soveshchanii, no. 4, 1954, pp. 10-21.)

Population Dynamics and the Present State of the Chum and Pink Salmon Stocks in the Amur River Basin, by I. B. Birman, OTS 60-51041, 16 pp., illus., processed. (Translated from Russian Akademiya Nauk SSSR, Ikhtiologicheskaya Komissiya, Trudy Soveshchanii, 1953, pp. 22-37.)

VENEZUELA:
Estudio de un Plan General de Puertos Pesqueros (Master Plan for Fishing Ports), by Gustavo Oramas, 248 pp., illus., processed in Spanish. Ministerio de Obras Publicas, Division de Puertos y Aeropuertos, Caracas, Venezuela, April 1961.

VESSELS:
"Deux Navires Congelateurs" (Two Freezerships), by A. Andre, article, Revue Pratique du Froid, vol. 13, no. 175, October 1960, pp. 26-27, illus., printed in French. Revue Pratique du Froid, 254 Rue de Vaugirard, Paris 15, France. Describes a tuna fishing vessel and a lobster fishing vessel. The tuna fishing vessel is equipped for fishing with live bait. Its hull is constructed of welded steel; its gross tonnage is 266 tons, and it has a capacity of 200 tons of frozen tuna. The lobster fishing vessel has a gross tonnage of 933 tons. The holds are cooled by direct expansion of ammonia and can be maintained at 28°C. (-18° F.). On the fishing grounds, the lobsters are beheaded live and the tails are frozen immediately.

"Fischereifahrzeuge mit Auswechselbaren Fischraumen im Zusammenwirken mit Einem Mutterschiff" (Fishing Vessels, with Removable Fishrooms in Operation with a Mothership), by W. von Sangerlaub, article, Schiffbautechnik, vol. 10, no. 3, 1960, pp. 129-133, printed in German. VEB Verlag Technik, 13/14 Oranienburgerstrasse, Berlin C2, Germany.

"Plastic Sheathing of Wooden Hulls" article, Ship and Boat Builder, vol. 13, no. 2, 1960, 50 pp., printed. John Trundell Ltd., St. Richards House, Eversholt St., London NW1, England.

VIRGINIA:
Drainage, Evolution and Distribution Problems of the Fishes of the New (Upper Kanawha) River System in Virginia. Part III--Records of Fishes of the New River, by Robert D. Ross and Benjamin D. Perkins, Technical Bulletin 145, 35 pp., printed. Virginia Agricultural Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va., 1959.

A Key to the Fishes of the Shenandoah River System in Virginia, by Robert D. Ross, Technical Bulletin 142, 14 pp., printed. Virginia Agricultural Experimental Station, Virginia Polytechnic Institute, Blacksburg, Va., 1959.

VITAMINS:
"Effect of Gamma-Radiation on Vitamin A and Influence of Antioxidants on It," by Mitsuo Hata and Toshio Onishi, article, Tohoku Journal of Agricultural Research, vol. 11, no. 4, December 1960, pp. 371-375, printed, Faculty of Agriculture, Tohoku University, Sendai, Japan.

WATER POLLUTION:
Impacts of Pollution on Fish and Wildlife, Recreation and Esthetic Values, by Seth Gordon, 14 pp., processed. U. S. Department of Health, Education, and Welfare, Public Health Service, Washington 25, D.C., 1960.

WHALE MEAT:
"Automatically Operating Plants for the Freezing of Whale-Meat on Board a Modern Whaler," by A. Zimmer, article, Bulletin de L'Institut du Froid, vol. 60, 1960, pp. 1014-1016, printed. Institut du Froid, Paris, France.

"Whale Meat Freezing, Transportation in the USSR," by A. Kan and E. Pavlov, article, Quick Frozen Foods, vol. 23, October 1960, pp. 288-289, printed. Quick Frozen Foods, E. W. Williams Publications, Inc., 82 Wall Street, New York 5, N. Y.

WHALES:
"Studies on Crystalline Whale Pepsin," by Yoshio Ishihara, article, Memoirs of the Faculty of Fisheries, Hokkaido University, vol. 8, no. 1, November 1960, pp. 1-81, illus., printed. Faculty of Fisheries, Hokkaido University, Kameda-Machi, Hako date, Japan.

WORLD TRADE:
The following World Trade Information Service Economic and Operations Reports, published by the

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Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Food Regulations of Federal Republic of Germany and West Berlin, Operations Report No. 61-12, 20 pp., printed, 10 cents, March 1961.

Establishing A Business in the Union of South Africa, Economic Report No. 61-13, 12 pp., printed, 10 cents, March 1961.

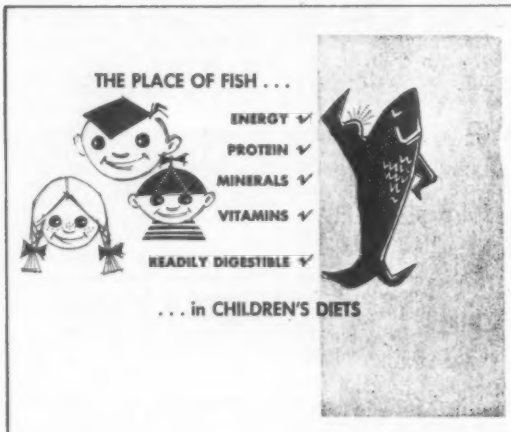
Economic Developments in Peru, 1960, Economic Report No. 61-20, 8 pp., printed, 10 cents, April 1961.

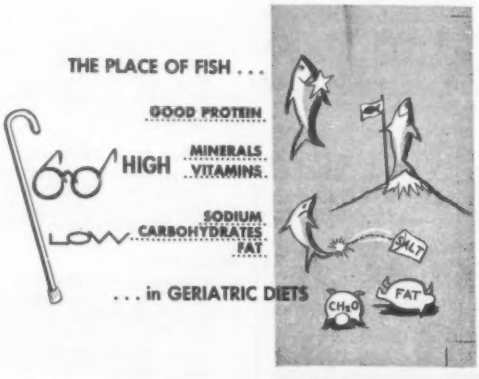
Establishing a Business in Egypt (UAR), Economic Report No. 61-24, 4 pp., printed 10 cents, April 1961.

Certificate and Other Requirements on Imports into Canada, Operations Report No. 61-28, 8 pp., printed, 10 cents, April 1961.

Licensing and Exchange Controls--Ceylon, Operations Report No. 61-29, 4 pp., printed, 10 cents, April 1961.

Import Tariff System of Gambia, Operations Report No. 61-33, 2 pp., printed, 10 cents, April 1961.





CHINOOK SALMON EGGS FOR NATIONAL FISH HATCHERY PROGRAM

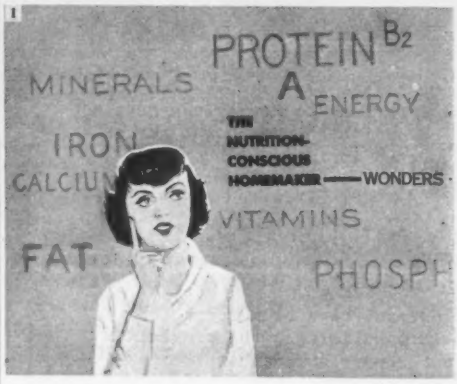
Fall chinook salmon returning to the Columbia River for spawning in the fall of 1960 yielded approximately 44 million eggs for the season's National Fish Hatchery program. Twenty-six percent of the adult fall salmon that passed Bonneville Dam on the trip from the sea to the Columbia River for spawning returned to National Fish Hatcheries.

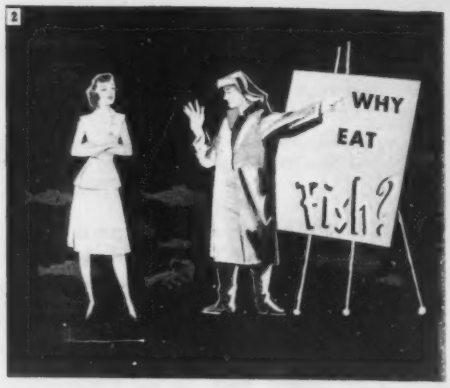
Hatchery employees at Spring Creek Fish Cultural Station (near Underwood, Wash.) removing and fertilizing salmon eggs.

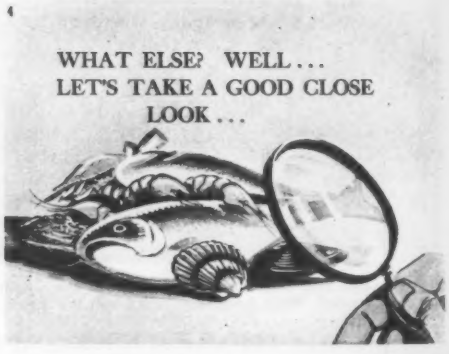
The taking of eggs--approximately 35 million at the Spring Creek hatchery and 8.5 million at the Little White Salmon hatchery--was not far from average.

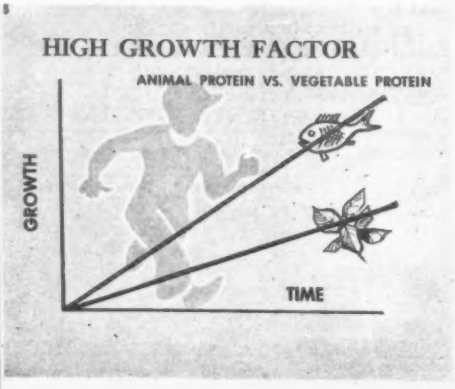
Some of the eggs taken early in the season had started hatching by the end of 1960. All of the fall chinook salmon produced at National Fish Hatcheries are held in rearing ponds for at least 90 days and then released. No fry will be planted in 1960 since survival rate among the fish held for 90 days is much higher than among fry.

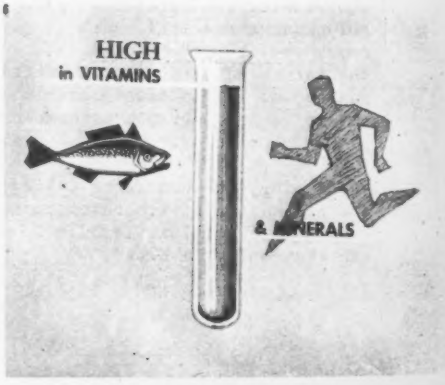
BALANCE FAT-INTAKE WITH FISH



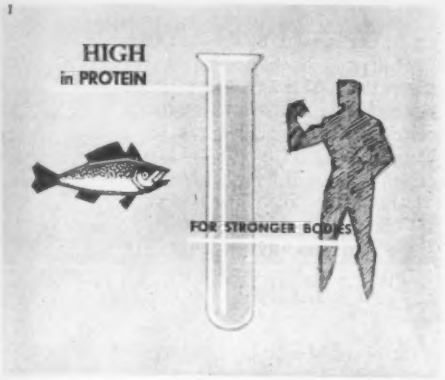


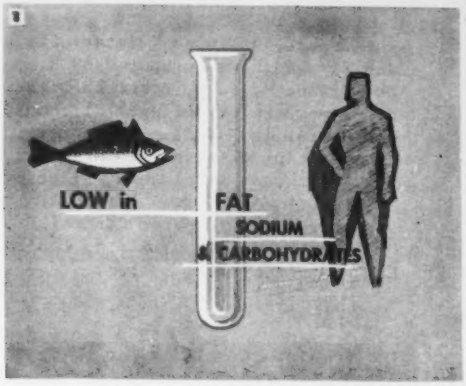


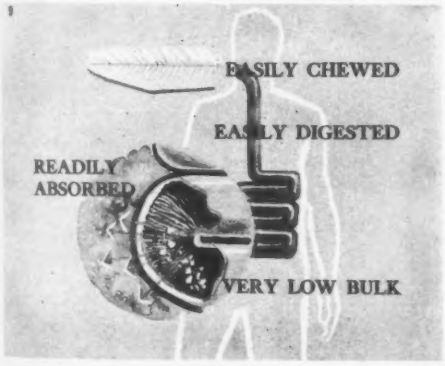


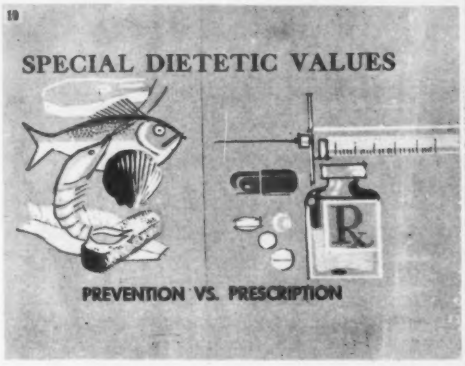


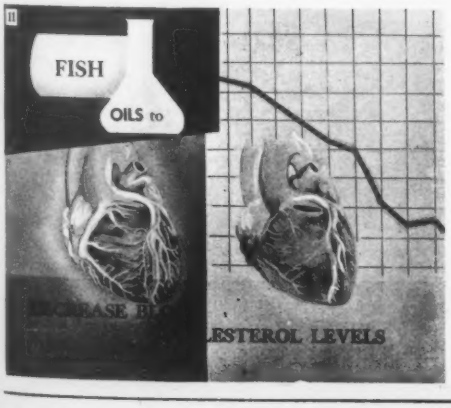
FOR BETTER HEALTH

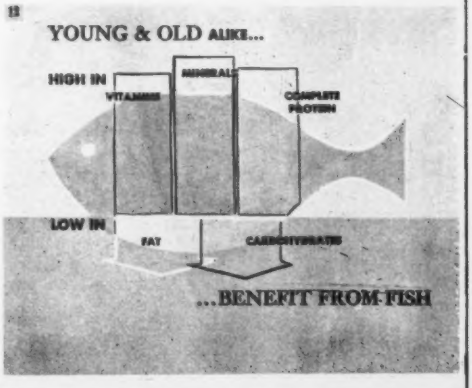












SEAFOOD DIP

1 cup flaked or canned fish
2 packages (3 ounces each) cream cheese
⅓ cup chopped stuffed olives
¼ cup mayonnaise or salad dressing
3 tablespoons coffee cream
¼ teaspoon grated onion
2 drops tabasco
Potato chips
Pretzel sticks
Parsley

Drain canned fish. Reserve 6 pieces of fish for garnish. Soften cream cheese at room temperature. Add olives, mayonnaise, cream, onion, tabasco, and fish; blend into a paste. Chill. Serve in a bowl surrounded by potato chips and pretzel sticks. Garnish dip with parsley and fish. Makes about 1 pint of dip.